Vol. 1253 Number 3

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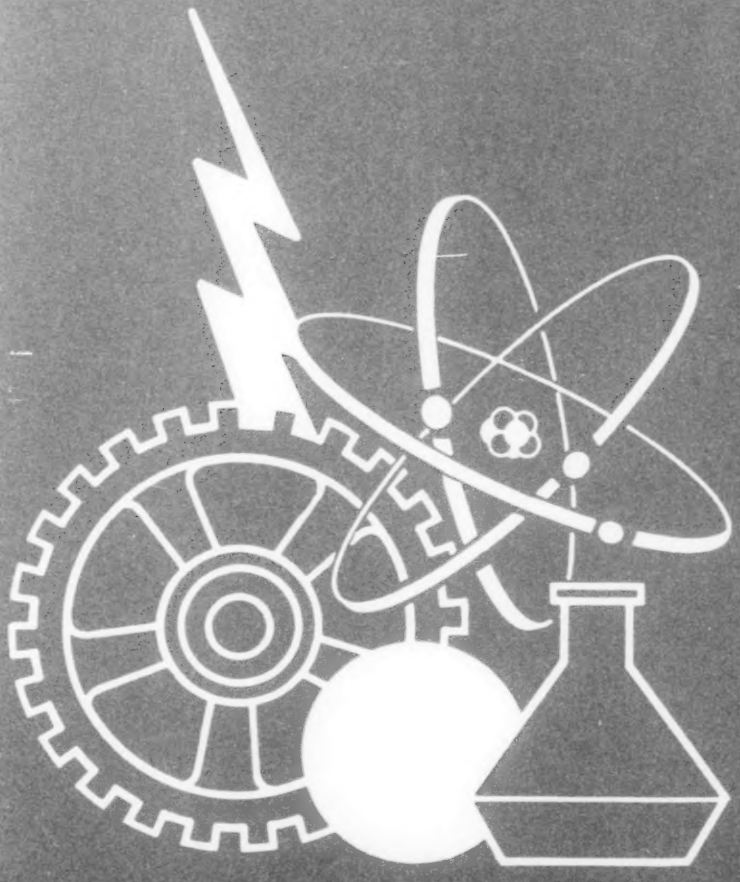
PATENTS

December 18, 2001



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

December 18, 2001 Volume 1253 Number 3

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1251 O.G. 72, on October 23, 2001.

Either the United States Patent and Trademark Office or the European Patent Office may act as the International Searching Authority for an international application filed with the United States Receiving Office or the International Bureau as Receiving Office where at least one of the applicants is either a national or resident of the United States of America.

The European Patent Office may act as the International Preliminary Examining Authority for an international application filed in the United States Receiving Office or the International Bureau as Receiving Office where at least one of the applicants is either a national or resident of the United States of America, provided that the European Patent Office acted as the International Searching Authority.

The search fee of the European Patent Office was decreased, effective November 1, 2000, and was announced in the *Official Gazette* at 1239 O.G. 116, on October 17, 2000.

International fees were changed, effective on November 15, 2000, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1239 O.G. 116, on October 17, 2000. A change in the maximum number of designation fees payable, with effect from January 1, 2001, was announced in the *Official Gazette* at 1244 O.G. 64, on March 20, 2001. A change in the reduction for electronic filing, with effect from January 1, 2000, was announced in the *Official Gazette* at 1229 O.G. 4, on December 7, 1999.

Certain domestic PCT fees have been changed, effective October 1, 2001, to adjust certain patent fee amounts to relect fluctuations in the Consumer Price Index. The revisions were announced in the *Official Gazette* at 1249 O.G. 111, on August 28, 2001.

The schedule of PCT fees (in U.S. dollars), as of October 1, 2001, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	$240.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	$700.00
— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a) and filing fee under 37 CFR 1.16(a) paid)	$450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	$210.00
European Patent Office as ISA	$846.00
International fees	
Basic fee	$382.00
Basic supplemental fee (for each page over 30)	$9.00
Designation fee per country or region	
— For the first 6 national or regional offices designated	$82.00
— For each designation in excess of 6 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	$82.00
— Confirmation fee	$41.00

(A reduction of $117 in the international fees is available in certain cases where PCT-EASY software is used to prepare the request, provided that the necessary conditions are met. See 1217 OG 131 (December 29, 1998)).

International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	$137.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	$490.00
— Additional examination fee, per additional invention (payable only upon invitation)	$140.00
— USPTO was not ISA in PCT Chapter I	$750.00
— Additional examination fee, per additional invention (payable only upon invitation)	$270.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	$50.00	$100.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	$355.00	$710.00
USPTO was ISA but not IPEA	$370.00	$740.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	$520.00	$1,040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	$445.00	$890.00
Other National fees		
— For each independent claim in excess of 3	$42.00	$84.00
— For each claim in excess of 20	$9.00	$18.00
— For each application containing a multiple dependent claim	$140.00	$280.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	$65.00	$130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	$130.00	$130.00

September 28, 2001

NICHOLAS P. GODICI
Acting Under Secretary of Commerce for Intellectual Property and Acting Director of the United States Patent and Trademark Office

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on December 8, 1998 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,845,333 through 5,848,438
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on December 6, 1994 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,369,804 through 5,371,314
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on December 4, 1990 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,974,262 through 4,975,979
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents may be submitted electronically over the Internet at www.uspto.gov.

Payments of maintenance fees in patents not submitted electronically over the Internet should be mailed to "United States Patent and Trademark Office, P.O. Box 371611, Pittsburgh, PA 15250-1611".

Correspondence related to maintenance fees other than payments of maintenance fees in patents is not to be mailed to P.O. Box 371611, Pittsburgh, PA 15250-1611, but must be mailed to "Box M Correspondence, "Commissioner of Patents and Trademarks, Washington, DC 20231".

Patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 2001, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.27(a)).....$440.00
By other than a small entity.....$880.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.27(a)).....$1,010.00
By other than a small entity.....$2,020.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.27(a)).....$1,550.00
By other than a small entity.....$3.100.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.27(a)).....$65.00
By other than a small entity.....$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable.....$700.00
(2) unintentional.....$1,640.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED ON October 17, 2001
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,873,738	07/250,949	10/17/89
4,873,746	07/300,773	10/17/89
4,873,747	07/272,762	10/17/89
4,873,761	07/238,636	10/17/89
4,873,764	07/260,852	10/17/89
4,873,765	07/238,020	10/17/89
4,873,771	07/170,682	10/17/89
4,873,778	07/283,203	10/17/89
4,873,781	07/215,569	10/17/89
4,873,799	07/088,630	10/17/89
4,873,810	07/072,241	10/17/89
4,873,811	07/239,026	10/17/89
4,873,813	07/026,756	10/17/89
4,873,814	07/282,378	10/17/89
4,873,832	07/281,310	10/17/89
4,873,841	07/331,796	10/17/89
4,873,846	07/292,415	10/17/89
4,873,849	07/300,791	10/17/89
4,873,851	07/325,951	10/17/89
4,873,866	07/033,771	10/17/89
4,873,870	07/145,373	10/17/89
4,873,872	07/148,011	10/17/89
4,873,873	07/150,968	10/17/89
4,873,875	06/879,588	10/17/89
4,873,879	07/093,671	10/17/89
4,873,882	07/250,208	10/17/89

Patent Number	Serial Number	Issue Date
4,873,887	07/117,792	10/17/89
4,873,892	07/088,494	10/17/89
4,873,894	07/264,583	10/17/89
4,873,911	07/273,940	10/17/89
4,873,921	07/219,557	10/17/89
4,873,923	07/239,040	10/17/89
4,873,925	07/145,327	10/17/89
4,873,926	07/101,287	10/17/89
4,873,932	07/304,540	10/17/89
4,873,938	06/878,776	10/17/89
4,873,951	07/286,514	10/17/89
4,873,965	07/219,388	10/17/89
4,873,977	07/013,855	10/17/89
4,873,985	07/140,680	10/17/89
4,873,987	07/213,358	10/17/89
4,873,989	06/915,113	10/17/89
4,873,995	07/121,218	10/17/89
4,874,001	07/115,703	10/17/89
4,874,005	07/281,125	10/17/89
4,874,010	07/199,216	10/17/89
4,874,019	07/329,288	10/17/89
4,874,020	07/253,855	10/17/89
4,874,025	07/194,196	10/17/89
4,874,030	07/326,938	10/17/89
4,874,039	07/216,540	10/17/89
4,874,050	07/271,992	10/17/89
4,874,051	07/309,184	10/17/89
4,874,059	07/200,924	10/17/89
4,874,066	07/311,082	10/17/89
4,874,080	07/205,379	10/17/89
4,874,097	07/169,588	10/17/89
4,874,110	07/263,316	10/17/89
4,874,119	07/267,229	10/17/89
4,874,131	07/051,643	10/17/89
4,874,133	07/259,410	10/17/89
4,874,134	07/220,791	10/17/89
4,874,152	07/180,906	10/17/89
4,874,153	07/071,273	10/17/89
4,874,162	07/270,352	10/17/89
4,874,171	07/095,281	10/17/89
4,874,176	07/032,343	10/17/89
4,874,183	07/216,183	10/17/89
4,874,185	07/216,651	10/17/89
4,874,187	07/105,045	10/17/89
4,874,198	07/262,598	10/17/89
4,874,212	07/191,021	10/17/89
4,874,221	07/345,162	10/17/89
4,874,238	07/066,423	10/17/89
4,874,242	06/881,900	10/17/89
4,874,246	07/298,200	10/17/89
4,874,250	06/942,934	10/17/89
4,874,253	07/032,067	10/17/89
4,874,254	07/244,683	10/17/89
4,874,256	07/198,102	10/17/89
4,874,269	07/189,386	10/17/89
4,874,270	06/718,702	10/17/89
4,874,276	07/241,432	10/17/89
4,874,280	06/887,812	10/17/89
4,874,293	07/268,586	10/17/89
4,874,294	07/198,501	10/17/89
4,874,323	07/264,037	10/17/89
4,874,325	07/248,059	10/17/89
4,874,331	07/220,864	10/17/89
4,874,336	07/168,360	10/17/89
4,874,337	07/275,292	10/17/89
4,874,359	07/132,967	10/17/89
4,874,371	07/117,479	10/17/89
4,874,373	07/021,135	10/17/89
4,874,394	07/146,976	10/17/89
4,874,412	07/202,789	10/17/89
4,874,415	07/281,604	10/17/89
4,874,426	07/250,671	10/17/89
4,874,427	07/127,600	10/17/89
4,874,428	07/242,981	10/17/89
4,874,433	07/201,947	10/17/89
4,874,435	07/138,349	10/17/89
4,874,453	06/817,115	10/17/89
4,874,457	07/184,516	10/17/89
4,874,465	07/173,961	10/17/89
4,874,483	07/304,265	10/17/89
4,874,487	07/142,153	10/17/89
4,874,489	07/217,385	10/17/89
4,874,500	07/073,805	10/17/89
4,874,502	07/220,908	10/17/89
4,874,505	07/151,380	10/17/89
4,874,511	07/259,767	10/17/89
4,874,514	06/622,499	10/17/89
4,874,515	07/257,290	10/17/89
4,874,519	07/238,059	10/17/89
4,874,529	07/162,005	10/17/89
4,874,533	07/096,634	10/17/89
4,874,534	07/141,736	10/17/89
4,874,536	06/625,984	10/17/89
4,874,537	07/251,719	10/17/89
4,874,545	07/062,062	10/17/89
4,874,553	07/024,565	10/17/89
4,874,555	07/189,260	10/17/89
4,874,562	07/117,171	10/17/89
4,874,563	06/940,234	10/17/89
4,874,567	07/042,138	10/17/89
4,874,569	07/002,048	10/17/89
4,874,577	07/120,177	10/17/89
4,874,581	07/216,070	10/17/89
4,874,583	07/125,834	10/17/89
4,874,591	07/225,380	10/17/89
4,874,595	07/152,854	10/17/89
4,874,598	07/144,172	10/17/89
4,874,603	07/168,155	10/17/89
4,874,605	07/125,673	10/17/89
4,874,610	07/065,434	10/17/89
4,874,620	07/244,279	10/17/89
4,874,622	07/068,301	10/17/89
4,874,637	07/261,782	10/17/89
4,874,645	07/043,403	10/17/89
4,874,657	06/933,951	10/17/89
4,874,672	07/157,192	10/17/89
4,874,676	07/185,396	10/17/89
4,874,690	07/237,588	10/17/89
4,874,694	07/035,347	10/17/89
4,874,699	06/898,513	10/17/89
4,874,719	07/221,008	10/17/89
4,874,726	07/121,951	10/17/89
4,874,728	07/171,424	10/17/89
4,874,729	07/180,748	10/17/89
4,874,731	07/107,604	10/17/89
4,874,743	06/712,376	10/17/89
4,874,750	06/908,273	10/17/89
4,874,753	06/801,306	10/17/89
4,874,764	07/063,401	10/17/89
4,874,784	07/312,125	10/17/89
4,874,785	07/312,260	10/17/89
4,874,788	07/312,124	10/17/89
4,874,789	07/312,131	10/17/89
4,874,809	07/148,242	10/17/89
4,874,813	07/012,456	10/17/89
4,874,814	07/316,564	10/17/89
4,874,815	07/096,247	10/17/89
4,874,828	07/104,150	10/17/89
4,874,830	07/109,619	10/17/89
4,874,845	06/620,122	10/17/89
4,874,849	06/944,621	10/17/89
4,874,878	07/301,160	10/17/89
4,874,881	07/242,016	10/17/89
4,874,891	06/858,393	10/17/89

Patent Number	Serial Number	Issue Date
4,874,893	07/133,045	10/17/89
4,874,915	07/292,574	10/17/89
4,874,920	07/298,263	10/17/89
4,874,930	07/085,123	10/17/89
4,874,933	07/088,397	10/17/89
4,874,935	07/253,873	10/17/89
4,874,949	07/096,856	10/17/89
4,874,953	07/254,141	10/17/89
4,874,959	07/176,608	10/17/89
4,874,963	07/155,150	10/17/89
4,874,966	07/146,889	10/17/89
4,874,971	07/180,425	10/17/89
4,874,973	07/201,904	10/17/89
4,874,980	07/286,245	10/17/89
4,874,983	07/196,652	10/17/89
4,874,985	07/224,285	10/17/89
4,875,002	07/129,895	10/17/89
4,875,005	07/228,491	10/17/89
4,875,008	07/156,101	10/17/89
4,875,019	07/222,723	10/17/89
4,875,023	07/192,193	10/17/89
4,875,025	07/044,011	10/17/89
4,875,026	07/086,403	10/17/89
4,875,031	07/134,866	10/17/89
4,875,032	07/113,022	10/17/89
4,875,034	07/153,116	10/17/89
4,875,037	06/764,775	10/17/89
4,875,051	07/190,001	10/17/89
4,875,053	07/210,007	10/17/89
4,875,055	07/273,549	10/17/89
4,875,060	07/275,865	10/17/89
4,875,066	07/200,560	10/17/89
4,875,077	07/284,734	10/17/89
4,875,085	07/195,468	10/17/89
4,875,087	07/222,303	10/17/89
4,875,089	07/328,741	10/17/89
4,875,093	07/251,595	10/17/89
4,875,094	07/179,109	10/17/89
4,875,095	07/207,121	10/17/89
4,875,096	06/898,268	10/17/89
4,875,102	07/261,973	10/17/89
4,875,106	07/198,133	10/17/89
4,875,112	06/815,110	10/17/89
4,875,114	07/106,882	10/17/89
4,875,116	07/153,999	10/17/89
4,875,119	07/162,999	10/17/89
4,875,125	07/108,062	10/17/89
4,875,126	07/154,265	10/17/89
4,875,128	07/217,440	10/17/89
4,875,132	07/266,541	10/17/89
4,875,139	07/131,006	10/17/89
4,875,141	07/138,544	10/17/89
4,875,148	07/285,117	10/17/89
4,875,162	07/115,073	10/17/89
4,875,190	07/135,349	10/17/89
4,875,192	07/127,621	10/17/89
4,875,195	07/046,155	10/17/89
4,875,226	07/184,210	10/17/89
4,875,227	07/252,380	10/17/89

PATENTS WHICH EXPIRED ON October 12, 2001
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
5,251,334	07/724,640	10/12/93
5,251,336	07/843,406	10/12/93
5,251,340	07/848,288	10/12/93
5,251,348	07/962,854	10/12/93
5,251,357	07/870,237	10/12/93
5,251,359	07/902,126	10/12/93
5,251,360	07/925,956	10/12/93
5,251,367	07/905,369	10/12/93
5,251,371	07/963,463	10/12/93
5,251,372	07/671,681	10/12/93
5,251,381	07/777,968	10/12/93
5,251,383	07/908,080	10/12/93
5,251,387	07/730,961	10/12/93
5,251,397	07/848,374	10/12/93
5,251,418	07/731,411	10/12/93
5,251,423	07/882,368	10/12/93
5,251,431	07/904,040	10/12/93
5,251,438	07/916,268	10/12/93
5,251,450	07/938,737	10/12/93
5,251,451	07/937,629	10/12/93
5,251,455	07/931,097	10/12/93
5,251,457	08/017,160	10/12/93
5,251,471	07/865,867	10/12/93
5,251,474	07/822,321	10/12/93
5,251,478	07/924,498	10/12/93
5,251,481	07/719,370	10/12/93
5,251,489	07/781,501	10/12/93
5,251,490	07/832,567	10/12/93
5,251,494	07/947,160	10/12/93
5,251,500	07/859,371	10/12/93
5,251,504	07/922,510	10/12/93
5,251,508	07/931,499	10/12/93
5,251,518	07/925,203	10/12/93
5,251,521	07/830,367	10/12/93
5,251,527	07/755,788	10/12/93
5,251,535	07/907,835	10/12/93
5,251,540	07/713,061	10/12/93
5,251,546	07/927,823	10/12/93
5,251,553	07/969,055	10/12/93
5,251,556	07/925,164	10/12/93
5,251,558	07/888,133	10/12/93
5,251,559	07/824,160	10/12/93
5,251,561	07/897,150	10/12/93
5,251,568	07/802,287	10/12/93
5,251,569	07/787,375	10/12/93
5,251,574	07/991,683	10/12/93
5,251,575	07/877,569	10/12/93
5,251,578	07/888,653	10/12/93
5,251,579	07/860,252	10/12/93
5,251,588	07/974,786	10/12/93
5,251,593	07/776,273	10/12/93
5,251,595	07/801,735	10/12/93
5,251,607	07/844,548	10/12/93
5,251,608	07/734,179	10/12/93
5,251,609	07/902,848	10/12/93
5,251,610	07/994,656	10/12/93
5,251,616	07/918,179	10/12/93
5,251,618	07/561,802	10/12/93
5,251,629	07/915,400	10/12/93
5,251,630	07/897,063	10/12/93
5,251,632	07/727,168	10/12/93
5,251,633	07/742,596	10/12/93
5,251,639	07/914,768	10/12/93
5,251,641	07/921,338	10/12/93
5,251,642	07/711,240	10/12/93
5,251,650	07/944,132	10/12/93
5,251,651	07/819,861	10/12/93
5,251,653	08/017,619	10/12/93
5,251,656	08/019,793	10/12/93
5,251,659	07/733,733	10/12/93
5,251,668	07/766,583	10/12/93
5,251,671	07/918,807	10/12/93
5,251,673	07/813,679	10/12/93
5,251,676	07/741,726	10/12/93
5,251,679	07/894,253	10/12/93
5,251,681	07/894,449	10/12/93
5,251,685	07/926,166	10/12/93
5,251,688	07/713,888	10/12/93

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5,251,694	07/724,905	10/12/93
5,251,698	07/903,114	10/12/93
5,251,700	07/648,659	10/12/93
5,251,707	07/858,008	10/12/93
5,251,710	07/853,925	10/12/93
5,251,712	07/903,828	10/12/93
5,251,715	07/981,292	10/12/93
5,251,717	07/717,324	10/12/93
5,251,720	07/845,929	10/12/93
5,251,721	07/871,693	10/12/93
5,251,722	07/765,663	10/12/93
5,251,723	07/872,172	10/12/93
5,251,725	07/909,974	10/12/93
5,251,728	07/801,033	10/12/93
5,251,730	07/916,065	10/12/93
5,251,734	07/883,631	10/12/93
5,251,735	07/978,817	10/12/93
5,251,736	07/987,165	10/12/93
5,251,737	07/861,139	10/12/93
5,251,738	07/855,427	10/12/93
5,251,743	07/928,503	10/12/93
5,251,745	08/003,207	10/12/93
5,251,746	08/003,336	10/12/93
5,251,747	08/003,363	10/12/93
5,251,751	07/969,985	10/12/93
5,251,752	07/684,661	10/12/93
5,251,753	07/965,453	10/12/93
5,251,759	08/036,483	10/12/93
5,251,763	07/392,532	10/12/93
5,251,766	07/849,204	10/12/93
5,251,770	07/879,768	10/12/93
5,251,773	07/766,536	10/12/93
5,251,774	07/926,753	10/12/93
5,251,782	07/746,491	10/12/93
5,251,786	07/746,410	10/12/93
5,251,788	07/872,044	10/12/93
5,251,789	07/890,428	10/12/93
5,251,792	07/951,821	10/12/93
5,251,793	07/656,309	10/12/93
5,251,794	07/902,893	10/12/93
5,251,796	07/832,597	10/12/93
5,251,797	07/833,453	10/12/93
5,251,800	07/966,304	10/12/93
5,251,814	07/962,118	10/12/93
5,251,816	07/922,415	10/12/93
5,251,821	07/792,468	10/12/93
5,251,823	07/927,331	10/12/93
5,251,824	07/703,925	10/12/93
5,251,825	07/963,137	10/12/93
5,251,826	07/852,077	10/12/93
5,251,836	07/833,439	10/12/93
5,251,844	07/936,714	10/12/93
5,251,848	07/882,720	10/12/93
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5,251,852	07/755,723	10/12/93
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5,251,861	07/901,104	10/12/93
5,251,864	07/871,395	10/12/93
5,251,873	07/893,813	10/12/93
5,251,876	07/758,797	10/12/93
5,251,877	07/764,501	10/12/93
5,251,878	07/623,959	10/12/93
5,251,881	07/838,418	10/12/93
5,251,884	07/865,220	10/12/93
5,251,896	07/778,528	10/12/93
5,251,902	07/853,413	10/12/93
5,251,903	07/963,565	10/12/93
5,251,905	07/847,539	10/12/93
5,251,906	07/926,710	10/12/93
5,251,911	07/988,326	10/12/93
5,251,914	07/690,149	10/12/93
5,251,916	07/863,617	10/12/93
5,251,922	07/933,726	10/12/93
5,251,928	07/867,545	10/12/93
5,251,931	07/851,981	10/12/93
5,251,941	07/775,041	10/12/93
5,251,942	07/846,060	10/12/93
5,251,945	07/839,849	10/12/93
5,251,948	07/977,617	10/12/93
5,251,955	07/855,723	10/12/93
5,251,956	07/615,123	10/12/93
5,251,962	07/794,429	10/12/93
5,251,969	07/859,410	10/12/93
5,251,976	07/863,831	10/12/93
5,251,978	07/838,457	10/12/93
5,251,979	07/918,004	10/12/93
5,251,980	07/920,484	10/12/93
5,251,981	07/874,684	10/12/93
5,251,989	07/927,461	10/12/93
5,251,993	07/934,239	10/12/93
5,251,998	07/829,956	10/12/93
5,251,999	07/866,897	10/12/93
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5,252,001	07/808,889	10/12/93
5,252,012	07/940,359	10/12/93
5,252,015	07/787,119	10/12/93
5,252,020	07/706,921	10/12/93
5,252,023	07/833,101	10/12/93
5,252,029	07/759,513	10/12/93
5,252,033	07/924,913	10/12/93
5,252,040	07/796,866	10/12/93
5,252,041	07/876,837	10/12/93
5,252,044	07/963,636	10/12/93
5,252,049	07/852,205	10/12/93
5,252,050	07/828,628	10/12/93
5,252,062	07/961,290	10/12/93
5,252,064	07/657,649	10/12/93
5,252,069	07/859,883	10/12/93
5,252,071	08/017,768	10/12/93
5,252,077	07/771,752	10/12/93
5,252,080	07/985,481	10/12/93
5,252,082	07/964,498	10/12/93
5,252,083	07/906,488	10/12/93
5,252,084	07/960,808	10/12/93
5,252,086	07/889,665	10/12/93
5,252,087	07/992,015	10/12/93
5,252,091	07/913,458	10/12/93
5,252,093	07/986,022	10/12/93
5,252,095	07/838,760	10/12/93
5,252,098	07/912,138	10/12/93
5,252,099	07/855,006	10/12/93
5,252,100	07/527,917	10/12/93
5,252,114	08/005,995	10/12/93
5,252,115	07/756,845	10/12/93
5,252,116	07/753,513	10/12/93
5,252,118	07/893,574	10/12/93
5,252,126	08/059,581	10/12/93
5,252,132	07/796,618	10/12/93
5,252,134	07/708,421	10/12/93
5,252,136	07/768,646	10/12/93
5,252,138	07/835,252	10/12/93
5,252,140	07/477,909	10/12/93
5,252,146	07/933,634	10/12/93
5,252,148	07/926,389	10/12/93
5,252,152	07/966,536	10/12/93
5,252,156	07/822,448	10/12/93
5,252,157	08/004,789	10/12/93
5,252,158	07/640,412	10/12/93
5,252,162	07/826,462	10/12/93
5,252,167	07/513,000	10/12/93
5,252,169	07/869,665	10/12/93
5,252,173	07/796,442	10/12/93
5,252,175	07/546,063	10/12/93
5,252,179	07/951,614	10/12/93

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5,252,186	07/839,341	10/12/93
5,252,187	07/918,453	10/12/93
5,252,189	07/812,702	10/12/93
5,252,192	07/963,185	10/12/93
5,252,193	07/787,662	10/12/93
5,252,195	07/980,313	10/12/93
5,252,203	07/951,652	10/12/93
5,252,206	07/914,878	10/12/93
5,252,215	07/835,465	10/12/93
5,252,247	07/668,533	10/12/93
5,252,257	07/834,414	10/12/93
5,252,266	07/908,280	10/12/93
5,252,270	07/879,431	10/12/93
5,252,271	07/781,509	10/12/93
5,252,273	07/704,925	10/12/93
5,252,282	07/915,349	10/12/93
5,252,284	07/817,937	10/12/93
5,252,298	07/872,621	10/12/93
5,252,312	07/954,848	10/12/93
5,252,321	07/994,138	10/12/93
5,252,330	07/596,879	10/12/93
5,252,360	07/911,694	10/12/93
5,252,366	07/991,502	10/12/93
5,252,373	07/850,250	10/12/93
5,252,382	07/753,848	10/12/93
5,252,393	07/879,123	10/12/93
5,252,394	07/585,963	10/12/93
5,252,396	07/778,155	10/12/93
5,252,403	07/838,945	10/12/93
5,252,409	07/841,837	10/12/93
5,252,412	07/857,398	10/12/93
5,252,415	07/624,394	10/12/93
5,252,418	07/567,180	10/12/93
5,252,421	07/655,189	10/12/93
5,252,432	08/004,673	10/12/93
5,252,448	07/932,894	10/12/93
5,252,455	07/845,897	10/12/93
5,252,480	07/349,643	10/12/93
5,252,482	07/610,312	10/12/93
5,252,490	07/429,767	10/12/93
5,252,492	07/668,237	10/12/93
5,252,507	07/502,898	10/12/93
5,252,525	07/833,497	10/12/93
5,252,526	07/768,472	10/12/93
5,252,528	07/489,315	10/12/93
5,252,532	07/667,315	10/12/93
5,252,536	07/815,674	10/12/93
5,252,537	07/659,300	10/12/93
5,252,539	07/856,262	10/12/93
5,252,541	07/820,764	10/12/93
5,252,542	07/686,015	10/12/93
5,252,544	07/712,264	10/12/93
5,252,545	07/073,241	10/12/93
5,252,546	07/417,103	10/12/93
5,252,550	07/737,572	10/12/93
5,252,555	07/889,277	10/12/93
5,252,560	07/905,933	10/12/93
5,252,561	07/824,933	10/12/93
5,252,567	07/629,502	10/12/93
5,252,578	07/677,136	10/12/93
5,252,583	07/876,411	10/12/93
5,252,584	07/801,998	10/12/93
5,252,586	07/589,863	10/12/93
5,252,597	07/936,143	10/12/93
5,252,602	07/774,664	10/12/93
5,252,603	07/623,096	10/12/93
5,252,608	07/896,264	10/12/93
5,252,617	08/033,527	10/12/93
5,252,620	07/862,521	10/12/93
5,252,621	07/723,917	10/12/93
5,252,622	07/791,756	10/12/93
5,252,623	08/006,495	10/12/93
5,252,624	07/808,417	10/12/93
5,252,625	07/720,735	10/12/93
5,252,636	07/803,247	10/12/93
5,252,638	07/747,966	10/12/93
5,252,644	07/920,829	10/12/93
5,252,657	08/012,174	10/12/93
5,252,669	07/810,060	10/12/93
5,252,699	07/883,506	10/12/93
5,252,705	07/778,926	10/12/93
5,252,708	07/856,042	10/12/93
5,252,712	07/227,829	10/12/93
5,252,713	07/248,456	10/12/93
5,252,722	07/964,037	10/12/93
5,252,729	07/781,469	10/12/93
5,252,730	07/866,913	10/12/93
5,252,751	07/823,516	10/12/93
5,252,758	07/981,595	10/12/93
5,252,772	07/801,401	10/12/93
5,252,778	07/838,928	10/12/93
5,252,789	07/879,558	10/12/93
5,252,793	07/842,126	10/12/93
5,252,797	07/910,659	10/12/93
5,252,800	07/804,318	10/12/93
5,252,801	07/897,832	10/12/93
5,252,813	07/682,540	10/12/93
5,252,818	07/748,657	10/12/93
5,252,823	07/952,432	10/12/93
5,252,827	07/753,633	10/12/93
5,252,831	07/787,275	10/12/93
5,252,835	07/916,215	10/12/93
5,252,839	07/896,276	10/12/93
5,252,847	07/241,887	10/12/93
5,252,862	07/876,253	10/12/93
5,252,872	07/735,591	10/12/93
5,252,874	07/980,415	10/12/93
5,252,886	07/865,530	10/12/93
5,252,888	07/814,857	10/12/93
5,252,890	07/925,429	10/12/93
5,252,893	07/770,558	10/12/93
5,252,895	07/697,371	10/12/93
5,252,904	07/970,070	10/12/93
5,252,910	07/904,569	10/12/93
5,252,911	07/733,488	10/12/93
5,252,919	07/747,292	10/12/93
5,252,922	07/694,514	10/12/93
5,252,923	07/781,135	10/12/93
5,252,927	07/778,665	10/12/93
5,252,928	07/853,820	10/12/93
5,252,937	07/564,901	10/12/93
5,252,951	07/779,702	10/12/93
5,252,952	07/744,363	10/12/93
5,252,954	07/492,588	10/12/93
5,252,955	07/705,346	10/12/93
5,252,964	07/928,164	10/12/93
5,252,979	07/979,968	10/12/93
5,252,988	07/628,845	10/12/93
5,253,002	07/917,656	10/12/93
5,253,019	07/428,726	10/12/93
5,253,036	07/755,700	10/12/93
5,253,038	07/607,776	10/12/93
5,253,039	07/775,753	10/12/93
5,253,057	07/811,363	10/12/93
5,253,068	07/830,006	10/12/93
5,253,073	07/861,915	10/12/93
5,253,085	07/765,521	10/12/93
5,253,088	07/874,777	10/12/93
5,253,109	07/874,635	10/12/93
5,253,114	08/015,399	10/12/93
5,253,116	07/795,815	10/12/93
5,253,120	07/501,717	10/12/93
5,253,127	07/730,077	10/12/93
5,253,132	07/786,505	10/12/93

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5,253,138	07/825,744	10/12/93
5,253,151	07/767,735	10/12/93
5,253,152	07/766,190	10/12/93
5,253,157	07/831,918	10/12/93
5,253,168	07/804,073	10/12/93
5,253,174	07/804,755	10/12/93
5,253,210	07/679,301	10/12/93
5,253,212	07/801,351	10/12/93
5,253,226	07/936,303	10/12/93
5,253,227	07/848,912	10/12/93
5,253,232	07/501,545	10/12/93
5,253,234	07/839,720	10/12/93
5,253,258	07/778,593	10/12/93
5,253,271	07/657,224	10/12/93
5,253,274	07/869,557	10/12/93
5,253,278	07/705,723	10/12/93
5,253,279	07/767,430	10/12/93
5,253,290	07/662,918	10/12/93
5,253,293	08/000,828	10/12/93
5,253,295	07/991,198	10/12/93
5,253,296	07/798,189	10/12/93
5,253,301	07/499,705	10/12/93
5,253,302	07/998,760	10/12/93
5,253,304	07/800,653	10/12/93
5,253,311	07/970,460	10/12/93
5,253,312	07/904,824	10/12/93
5,253,315	07/800,745	10/12/93
5,253,320	07/980,178	10/12/93
5,253,321	07/884,820	10/12/93
5,253,324	07/953,568	10/12/93
5,253,330	07/374,742	10/12/93
5,253,332	07/719,995	10/12/93
5,253,333	07/469,241	10/12/93
5,253,357	07/715,077	10/12/93
5,253,360	07/902,797	10/12/93

PATENTS WHICH EXPIRED ON October 14, 2001
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
5,675,838	08/670,817	10/14/97
5,675,840	08/633,681	10/14/97
5,675,841	08/427,759	10/14/97
5,675,847	08/685,628	10/14/97
5,675,851	08/728,292	10/14/97
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5,675,867	08/435,581	10/14/97
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5,675,911	08/308,392	10/14/97
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5,675,923	08/526,411	10/14/97
5,675,926	08/663,514	10/14/97
5,675,927	08/664,554	10/14/97
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5,675,931	08/417,125	10/14/97
5,675,935	08/498,123	10/14/97
5,675,942	08/520,163	10/14/97
5,675,947	08/634,188	10/14/97
5,675,951	08/541,243	10/14/97
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5,675,973	08/585,521	10/14/97
5,675,980	08/719,871	10/14/97
5,675,981	08/719,883	10/14/97
5,675,983	08/712,081	10/14/97
5,675,984	08/714,335	10/14/97
5,675,985	08/685,923	10/14/97
5,675,986	08/547,228	10/14/97
5,675,989	08/596,552	10/14/97
5,675,995	08/221,696	10/14/97
5,675,996	08/630,577	10/14/97
5,675,997	08/599,409	10/14/97
5,675,998	08/471,357	10/14/97
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5,676,001	08/685,849	10/14/97
5,676,002	08/419,119	10/14/97
5,676,003	08/373,307	10/14/97
5,676,007	08/600,826	10/14/97
5,676,011	08/649,356	10/14/97
5,676,021	08/601,151	10/14/97
5,676,025	08/573,966	10/14/97
5,676,039	08/678,410	10/14/97
5,676,041	08/383,352	10/14/97
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5,676,050	08/675,336	10/14/97
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5,676,067	08/611,651	10/14/97
5,676,074	08/506,415	10/14/97
5,676,075	08/650,776	10/14/97
5,676,079	08/594,105	10/14/97
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5,676,090	08/606,076	10/14/97
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5,676,128	08/500,320	10/14/97
5,676,129	08/616,152	10/14/97
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5,676,262	08/555,485	10/14/97
5,676,266	08/595,390	10/14/97
5,676,274	08/624,888	10/14/97

Patent Number	Serial Number	Issue Date
5,676,279	08/631,920	10/14/97
5,676,282	08/726,270	10/14/97
5,676,283	08/676,472	10/14/97
5,676,288	08/582,877	10/14/97
5,676,290	08/700,826	10/14/97
5,676,294	08/637,535	10/14/97
5,676,297	08/244,157	10/14/97
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5,676,369	08/754,185	10/14/97
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5,676,426	08/584,424	10/14/97
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5,676,432	08/576,899	10/14/97
5,676,449	08/637,555	10/14/97
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5,676,482	08/667,501	10/14/97
5,676,487	08/666,337	10/14/97
5,676,489	08/578,219	10/14/97
5,676,491	08/600,765	10/14/97
5,676,503	08/650,617	10/14/97
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5,676,529	08/680,749	10/14/97
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5,676,546	08/774,628	10/14/97
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5,676,583	08/695,593	10/14/97
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5,676,601	08/624,505	10/14/97
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5,676,626	08/714,281	10/14/97
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5,676,638	08/409,102	10/14/97
5,676,643	08/387,549	10/14/97
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5,676,669	08/056,115	10/14/97
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5,677,143	08/242,677	10/14/97
5,677,150	08/603,090	10/14/97
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5,677,172	08/295,676	10/14/97
5,677,182	08/424,243	10/14/97
5,677,191	08/523,275	10/14/97
5,677,203	08/556,877	10/14/97
5,677,230	08/566,333	10/14/97
5,677,231	08/656,817	10/14/97

Patent Number	Serial Number	Issue Date
5,677,244	08/650,559	10/14/97
5,677,255	08/707,522	10/14/97
5,677,273	08/464,790	10/14/97
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5,677,416	08/744,737	10/14/97
5,677,433	08/693,196	10/14/97
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5,677,466	08/447,667	10/14/97
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5,677,696	08/499,796	10/14/97
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5,677,701	08/386,151	10/14/97
5,677,702	08/362,089	10/14/97
5,677,726	08/446,408	10/14/97
5,677,751	08/273,113	10/14/97
5,677,770	08/272,744	10/14/97
5,677,782	08/744,822	10/14/97
5,677,784	08/506,011	10/14/97
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5,677,957	08/554,936	10/14/97
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5,677,973	08/497,374	10/14/97
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5,677,980	08/662,310	10/14/97
5,677,998	08/211,935	10/14/97
5,678,016	08/512,741	10/14/97
5,678,024	08/438,136	10/14/97
5,678,028	08/328,429	10/14/97
5,678,053	08/315,239	10/14/97
5,678,077	08/718,267	10/14/97
5,678,091	08/188,675	10/14/97
5,678,099	08/634,560	10/14/97
5,678,114	08/489,029	10/14/97
5,678,134	08/624,004	10/14/97
5,678,162	08/339,988	10/14/97
5,678,166	08/509,610	10/14/97
5,678,172	08/429,747	10/14/97
5,678,175	08/466,176	10/14/97
5,678,177	08/360,728	10/14/97
5,678,204	08/276,031	10/14/97
5,678,207	08/430,921	10/14/97
5,678,220	08/449,616	10/14/97
5,678,221	08/370,341	10/14/97
5,678,231	08/677,096	10/14/97
5,678,232	08/695,330	10/14/97
5,678,235	08/699,334	10/14/97
5,678,241	08/748,965	10/14/97

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 11/02/01

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
5,222,085	07/602,409	10/22/90	06/22/93	11/06/01
5,231,806	07/923,467	08/03/92	08/03/93	11/08/01
5,234,151	07/936,950	08/28/92	08/10/93	11/06/01
5,458,340	08/380,291	01/30/95	10/17/95	11/06/01
5,558,870	08/317,311	10/03/94	09/24/96	11/08/01
5,573,451	08/258,980	06/13/94	11/12/96	11/07/01
5,591,669	08/454,034	05/30/95	01/07/97	11/05/01
5,606,755	08/417,518	04/05/95	03/04/97	11/05/01
5,632,133	08/222,105	07/25/94	05/27/97	11/06/01
5,637,366	08/483,687	06/07/95	06/10/97	11/07/01
5,640,497	08/377,008	01/23/95	06/17/97	11/07/01

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
5,646,268	08/594,522	01/31/96	07/08/97	11/08/01
5,653,906	08/332,112	10/31/94	08/05/97	11/07/01

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(b)).

4,981,784, Re. S.N. 09/773,041, Jan. 31, 2001, Cl. 435/006, RETINOIC ACID RECEPTOR METHOD, Owner of Record: *The Salk Institutes for Biological Studies, San Diego, CA,* Attorney or Agent: R. Danny Huntington, Ex. Gp.: 2736

5,462,120, Re. S.N. 09/944,115, Sep. 04, 2001, Cl. 166/380, DOWNHOLE EQUIPMENT, TOOLS AND ASSEMBLY PROCEDURES FOR THE DRILLING, TIE-IN AND COMPLETION OF VERTICAL CASED OIL WELLS CONNECTED TO LINER-EQUIPPED MULTIPLE DRAINHOLES, Michel Gondouin, Owner of Record: *Halliburton Energy Services, Inc., Dallas, TX,* Attorney or Agent: Kathleen A. Daley, Ex. Gp.: 3672

5,489,307, Re. S.N. 09/971,307, Oct. 04, 2001, Cl. 623/017, SPINAL STABILIZATION SURGICAL METHOD, Stephen D. Kuslich, et al., Owner of Record: *Sulzer Spine-Tech Inc., Minneapolis, MN,* Attorney or Agent: Christopher R. Kirby, Ex. Gp.: 3738

5,631,612, Re. S.N. 09/925,942, Aug. 10, 2001, Cl. 333/193, SURFACE ACOUSTIC WAVE FILTER, Yoshio Satoh, et al., Owner of Record: *Fujitsu Limited, Kawasaki-shi, Japan,* Attorney or Agent: John C. Garvey, Ex. Gp.: 2817

5,781,836, Re. S.N. 09/963,853, Sep. 27, 2001, Cl. 399/275, DEVELOPING DEVICE HAVING REGULATING ROTARY MEMBER FOR REGULATING TONER AMOUNT, Tatsuya Tada, et al., Owner of Record: *Canon Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: William M. Wannisky, Ex. Gp.: 2852

5,819,034, Re. S.N. 09/903,448, Jul. 10, 2001, Cl. 395/200.310, APPARATUS FOR TRANSMITTING AND RECEIVING EXECUTABLE APPLICATIONS AS FOR A MULTI-MEDIA SYSTEM, AND SYSTEM TO ORDER AND ITEM USING A DISTRIBUTED COMPUTING SYSTEM, Kuriacose Joseph, et al., Owner of Record: *Thomson Consumer electronics, Inc., Indianapolis, IN,* Attorney or Agent: Andre L. Marais, Ex. Gp: 2783

5,859,060, Re. S.N. 09/759,446, Jan. 12, 2001, Cl. 514/569, TIMED RELEASE TABLET COMPRISING NAPROXEN AND PSEUDUEPHERINE, Chris e. Platt, Owner of Record: *Inventor,* Attorney or Agent: Guy Porter Smith, Ex. Gp.: 1614

5,868,123, Re. S.N. 09/779,877, Feb. 8, 2001, Cl. 123/634, MAGNETIC CORE-COIL ASSEMBLY FOR SPARK IGNITION SYSTEMS, Ryusuke Hasegawa, et. al., Owner of Record: *Ernest D. Buff, Morristown, NJ,* Attorney or Agent: Charlotte H. Copperthite, Ex. Gp.: 3747

5,894,847, Re. S.N. 09/773,946, Feb. 2, 2001, Cl. 132/218, BRUSH HAVING PLANO-CONVEX PROFILE, Jean-Louis H. Gueret, Owner of Record: *L'oreal, Paris, France,* Attorney or Agent: Anthony M. Gutowski, Ex. Gp.: 3732

5,905,974, Re. S.N. 09/859,661, May 17, 2001, Cl. 705/037, AUTOMATED AUCTION PROTOCOL PROCESSOR, Stuart A. Fraser, et. al., Owner of Record: *Cantor Fitzgerald, L.P., New York, NY,* Attorney or Agent: Matthew T. Byrne, Ex. Gp.: 2161

5,909,845, Re. S.N. 09/875,172, Jun. 07, 2001, Cl. 239/044, WICK-BASED LIQUID EMANATION SYSTEM WITH CHILD-RESISTANT OVERCAP, Keith J. Greatbatch, et al., Owner of Record: *S.C. Johnson & Son, Inc., Racine, WI,* Attorney or Agent: Edmund J. Haughey, Ex. Gp.: 3752

5,913,670, Re. S.N. 09/886,234, Jun. 21, 2001, Cl. 043/043.120, BREAKAWAY LINKS FOR UNDERWATER GEAR, Erik S. Anderson, et. al., Owner of Record: *Inventor,* Attorney or Agent: Dennis H. Rainear, Ex. Gp.: 3643

5,915,739, Re. S.N. 09/887,013, Jun. 25, 2001, Cl. 285/114, CLAMP RETENTION DEVICE, Owner of Record: *ACD Tridon Inc., Burlington, Canada,* Attorney or Agent: Ingrid E. Schmidt, Ex. Gp.: 3629

5,929,466, Re. S.N. 09/915,710, Jul. 27, 2001, Cl. 257/103, SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING THE SAME, Yasuo Ohba, et al., Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki-shi, Japan,* Attorney or Agent: Marvin J. Spivak, Ex. Gp.: 2815

5,930,729, Re. S.N. 09/885,376, Jun. 21, 2001, Cl. 455/571, RANGE EXTENSION ACCESSORY APPARATUS FOR CELLULAR MOBILE TELEPHONES, Elias G. Khamis, et. al., Owner of Record: *Pacific Cellstar Inc.,* Attorney or Agent: James Y. Sze, Ex. Gp.: 2683

5,941,474, Re. S.N. 09/871,978, Jun. 4, 2001, Cl. 714/718, SEMICONDUCTOR INTEGRATED CIRCUIT COMPRISING SYNCHRONOUS DRAM CORE AND LOGIC CIRCUIT AND METHOD OF TESTING THE SYNCHRONOUS DRAM CORE, Makoto Hatakenaka, et. al., Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Jeffrey A. Wyand, Ex. Gp.: 2133

5,951,371, Re. S.N. 09/951,165, Sep. 13, 2001, Cl. 451/028, MULTI-POINT BENDING OF BARS DURING FABRICATION OF MAGNETIC RECORDING HEADS, Shanlin X. Hao, Owner of Record: *Seagate Technology, Inc., Scotts Valley, CA,* Attorney or Agent: Deirdre Megley Kvale, Ex. Gp.: 3723

5,951,561, Re. S.N. 09/951,983, Sep. 13, 2001, Cl. 606/080, MINIMALLY INVASIVE INTRAMEDULLARY NAIL INSERTION INSTRUMENTS AND METHOD, John Pepper, et al., Owner of Record: *Smith & Nephew, Inc., Memphis, TN,* Attorney or Agent: Camilla C. Williams, Ex. Gp.: 3731

5,952,783, Re. S.N. 09/951,749, Sep. 14, 2001, Cl. 313/590, SURFACE DISCHARGE TYPE PLASMA DISPLAY PANEL DIVIDED INTO A PLURALITY OF SUB-SCREENS, Seiki Kuroki, et al., Owner of Record: *Fujitsu Limited, Kawasaki-shi, Japan,* Attorney or Agent: H. J. Staas, Ex. Gp.: 2875

5,955,240, Re. S.N. 09/956,516, Sep. 20, 2001, Cl. 430/270.1, POSITIVE RESIST COMPOSITION, Kazufumi Sato, et al., Owner of Record: *Tokyo Ohka Kogyo Co., Ltd., Kawasaki-shi, Japan,* Attorney or Agent: William T. McClain, Ex. Gp.: 1752

5,961,614, Re. S.N. 09/972,847, Oct. 04, 2001, Cl. 710/022, SYSTEM FOR DATA TRANSFER THROUGH AN I/O DEVICE USING A MEMORY ACCESS CONTROLLER WHICH RECEIVES AND STORES INDICATION OF A DATA STATUS SIGNAL, Kevin M. Christiansen, Owner of Record: *Apple Computer, Inc., Cupertino, CA,* Attorney or Agent: Kirk A. Gottlieb, Ex. Gp.: 2782

5,961,662, Re. S.N. 09/970,688, Oct. 05, 2001, Cl. 008/137, WASHING METHOD AND CLOTHES DETERGENT COMPOSITION, Shu Yamaguchi, et al., Owner of Record: *KAO Corporation, Tokyo, Japan,* Attorney or Agent: John W. Bailey, Ex. Gp.: 1753

5,963,387, Re. S.N. 09/971,081, Oct. 05, 2001, Cl. 360/049, METHOD FOR FORMING AND PROCESSING DATA ADDRESS MARK FOR HARD DISK DRIVE, Ok-Hyun Son, Owner of Record: *Samsung Electronics Co., Ltd., Kyungki-do, Korea,* Attorney or Agent: Robert E. Bushnell, Ex. Gp.: 2753

5,963,915, Re. S.N. 09/970,772, Oct. 04, 2001, Cl. 705/026, SECURE, CONVENIENT AND EFFICIENT SYSTEM AND METHOD OF PERFORMING TRANS-INTERNET PURCHASE TRANSACTIONS, Steven T. Kirsch, Owner of Record: *Infoseek Corporation, Santa Clara, CA,* Attorney or Agent: Charles Berman, Ex. Gp.: 2764

5,967,493, Re. S.N. 09/981,435, Oct. 16, 2001, Cl. 254/010.5, SPRING COMPRESSOR, Peter Amstutz, Owner of Record: *Peter Amstutz,* Attorney or Agent: Jack Paavila, Ex. Gp.: 3723

5,969,731, Re. S.N. 09/969,104, Oct. 02, 2001, Cl. 347/033, PRINTHEAD SERVICING SYSTEM AND METHOD EMPLOYING A SOLID LIQUEFIABLE SUBSTANCE, Donald L. Michael, et al., Owner of Record: *Hewlett-Packard Company, Fort Collins, CO,* Attorney or Agent: W. Norman Roth, Ex. Gp.: 2861

5,970,446, Re. S.N. 09/978,250, Oct. 17, 2001, Cl. 704/233, SELECTIVE NOISE/CHANNEL/CODING MODELS AND RECOGNIZERS FOR AUTOMATIC SPEECH RECOGNITION, Randy G. Goldberg, et al., Owner of Record: *AT & T Corp, New York, NY,* Attorney or Agent: Robert L. Hails, Jr., Ex. Gp.: 2641

5,970,976, Re. S.N. 09/982,276, Oct. 17, 2001, Cl. 128/204.23, APPARATUS AND METHOD FOR GENERATING PRESSURE CHANGES IN A MAMMALIAN ORAL/THROAT CAVITY, Hongwei Zhao, Owner of Record: *Hongwei Zhao,* Attorney or Agent: Gordon K. Harris, Jr., Ex. Gp.: 3761

5,981,860, Re. S.N. 09/976,769, Oct. 12, 2001, Cl. 084/603, SOUND SOURCE SYSTEM BASED ON COMPUTER SOFTWARE AND METHOD OF GENERATING ACOUSTIC WAVEFORM DATA, Yoshimasa Isozaki, et al., Owner of Record: *Yamaha Corporation, Hamamatsu-shi, Japan,* Attorney or Agent: David L. Fehrman, Ex. Gp: 2837

6,022,147, Re. S.N. 09/808,008, Mar. 15, 2001, Cl. 384/574, ROLLER BEARING WITH A CAGE, Takashi Murai et al., Owner of Record: *NSK Ltd., Tokyo, Japan,* Attorney or Agent: Mitchell W. Shapiro, Ex. Gp.: 3682

6,041,031, Re. S.N. 09/726,436, Dec. 1, 2000, Cl. 369/112, OPTICAL DISK RECORDING/REPRODUCTION APPARATUS AND METHOD, Isao Ichimura, et. al., Owner of Record: *Sony Corporation, Tokyo, Japan,* Attorney or Agent: Ronald P. Kananen, Ex. Gp.: 2651

6,085,369, Re. S.N. 09/816,252, Mar. 26, 2001, Cl. 005/421, SELECTIVELY COOLED OR HEATED CUSHION AND APPARATUS THEREFOR, Steve Feher, Owner of Record: *Steve Feher,* Attorney or Agent: George J. Netter, Ex. Gp.: 3627

Request for Ex Parte Reexamination Filed

6,071,211, Reexam. C.N. 90/006,142, Requested Date: Nov. 21, 2001, Cl. 477/175, Title: IDLE DRIVE TORQUE CONTROL FOR AUTOMATED VEHICLE MASTER CLUTCH, Inventor: Chia-Hsiang Liu, et. al., Owner of Record: *Eaton Corporation, Cleveland, OH,* Attorney or Agent: Kevin M. Hinman, Southfield, MI, Ex. Gp.: 3681, Requester: Owners

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within one year before the expiration of the period for which the registration was issued or renewed, or it may be done within six months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
November 23, 2001
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
80,117	71/045,875	11/08/1910
136,818	71/117,974	11/09/1920
136,785	71/121,617	11/09/1920
136,882	71/127,865	11/09/1920
136,982	71/130,704	11/09/1920
136,980	71/131,002	11/09/1920
136,840	71/131,335	11/09/1920
136,805	71/132,013	11/09/1920
136,926	71/132,151	11/09/1920
136,946	71/132,883	11/09/1920
277,473	71/293,399	11/11/1930
277,245	71/301,310	11/11/1930
277,243	71/302,212	11/11/1930
277,217	71/302,616	11/11/1930
382,604	71/414,482	11/05/1940
382,708	71/423,377	11/05/1940
382,612	71/426,303	11/05/1940
382,618	71/428,076	11/05/1940
382,634	71/431,217	11/05/1940
382,636	71/431,298	11/05/1940
382,656	71/432,770	11/05/1940
382,667	71/432,977	11/05/1940
382,681	71/433,365	11/05/1940
382,682	71/433,367	11/05/1940
382,683	71/433,369	11/05/1940
533,008	71/531,491	11/07/1950
533,031	71/545,027	11/07/1950
531,159	71/551,873	09/26/1950
533,064	71/567,051	11/07/1950
533,141	71/579,677	11/07/1950
533,150	71/580,404	11/07/1950
533,165	71/582,091	11/07/1950
533,191	71/584,142	11/07/1950
706,911	72/046,463	11/08/1960
707,002	72/051,914	11/08/1960
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707,003	72/057,432	11/08/1960
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707,036	72/067,975	11/08/1960
706,958	72/072,665	11/08/1960
706,806	72/073,113	11/08/1960
706,807	72/073,885	11/08/1960
706,951	72/074,002	11/08/1960
706,890	72/079,914	11/08/1960
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706,892	72/080,487	11/08/1960
707,032	72/082,383	11/08/1960
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707,045	72/082,968	11/08/1960
706,812	72/083,016	11/08/1960
706,990	72/083,281	11/08/1960
706,948	72/085,855	11/08/1960
700,815	72/086,306	07/12/1960
706,854	72/087,001	11/08/1960
707,019	72/089,883	11/08/1960
707,020	72/089,896	11/08/1960
706,871	72/090,109	11/08/1960
706,815	72/090,125	11/08/1960

Reg. Number	Serial Number	Reg. Date
706,898	72/090,135	11/08/1960
706,967	72/091,261	11/08/1960
706,899	72/091,345	11/08/1960
706,900	72/091,346	11/08/1960
706,816	72/091,369	11/08/1960
707,022	72/091,434	11/08/1960
706,817	72/091,484	11/08/1960
706,901	72/091,506	11/08/1960
706,863	72/091,574	11/08/1960
706,904	72/091,973	11/08/1960
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706,844	72/093,578	11/08/1960
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902,345	72/187,806	11/10/1970
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902,348	72/282,589	11/10/1970
902,023	72/292,699	11/10/1970
902,170	72/295,225	11/10/1970
902,251	72/296,755	11/10/1970
1,141,445	72/301,002	11/11/1980
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902,144	72/320,348	11/10/1970
902,174	72/320,646	11/10/1970
902,127	72/322,022	11/10/1970
902,221	72/323,767	11/10/1970
902,293	72/324,553	11/10/1970
902,294	72/324,850	11/10/1970
902,148	72/325,334	11/10/1970
902,149	72/325,962	11/10/1970
902,231	72/327,634	11/10/1970
904,941	72/329,131	12/22/1970
902,028	72/331,859	11/10/1970
902,299	72/334,140	11/10/1970
902,300	72/334,141	11/10/1970
902,214	72/334,869	11/10/1970
902,187	72/335,934	11/10/1970
902,188	72/335,978	11/10/1970
901,974	72/337,984	11/10/1970
902,111	72/338,235	11/10/1970
902,301	72/338,925	11/10/1970
902,254	72/339,362	11/10/1970
902,378	72/341,993	11/10/1970
902,216	72/343,698	11/10/1970
902,224	72/343,815	11/10/1970
902,279	72/344,618	11/10/1970
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902,033	72/352,956	11/10/1970
902,006	72/354,830	11/10/1970
902,261	72/358,500	11/10/1970
902,020	72/359,312	11/10/1970
901,987	72/360,371	11/10/1970
902,269	72/360,414	11/10/1970
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902,286	72/360,628	11/10/1970
902,021	72/360,838	11/10/1970
1,141,325	72/435,708	11/11/1980
1,141,263	73/087,082	11/11/1980
1,141,353	73/107,506	11/11/1980
1,141,228	73/120,110	11/11/1980
1,141,435	73/120,126	11/11/1980
1,141,323	73/120,315	11/11/1980
1,141,222		
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1,621,759		
1,621,369		
1,620,896		
1,620,897		
1,620,898		
1,620,823		
73/123,961		11/11/1980
73/137,062		11/11/1980
73/165,827		11/11/1980
73/168,469		11/11/1980
73/173,338		11/11/1980
73/174,797		11/11/1980
73/174,799		11/11/1980
73/176,135		11/11/1980
73/176,257		11/11/1980
73/176,902		11/11/1980
73/178,993		11/11/1980
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73/185,195		11/11/1980
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73/189,876		11/11/1980
73/190,001		11/11/1980
73/191,187		11/11/1980
73/191,793		11/11/1980
73/192,340		11/11/1980
73/192,916		11/11/1980
73/194,453		11/11/1980
73/194,693		11/11/1980
73/194,845		11/11/1980
73/194,963		11/11/1980
73/196,086		11/11/1980
73/200,542		11/11/1980
73/201,911		11/11/1980
73/203,847		11/11/1980
73/204,357		11/11/1980
73/205,001		11/11/1980
73/206,447		11/11/1980
73/207,569		11/11/1980
73/207,804		11/11/1980
73/207,840		11/11/1980
73/209,779		11/11/1980
73/210,053		11/11/1980
73/210,225		11/11/1980
73/210,261		11/11/1980
73/210,619		11/11/1980
73/210,620		11/11/1980
73/212,031		11/11/1980
73/215,018		11/11/1980
73/216,270		11/11/1980
73/217,548		11/11/1980
73/219,722		11/11/1980
73/224,523		11/11/1980
73/226,706		11/11/1980
73/227,346		11/11/1980
73/229,672		11/11/1980
73/684,417		11/06/1990
73/726,595		11/06/1990
73/741,987		11/06/1990
73/750,585		11/28/1989
73/760,015		11/06/1990
73/763,090		11/06/1990
73/763,454		11/06/1990
73/767,517		11/06/1990
73/774,517		11/06/1990
73/778,167		11/06/1990
73/782,093		11/06/1990
73/783,578		11/06/1990
73/788,864		11/06/1990
73/789,346		11/06/1990
73/791,700		11/06/1990
73/792,289		11/06/1990
73/792,290		11/06/1990
73/792,644		11/06/1990
73/794,236		11/06/1990

Reg. Number	Serial Number	Reg. Date
1,621,581	73/795,598	11/06/1990
1,620,722	73/796,980	11/06/1990
1,621,421	73/798,784	11/06/1990
1,574,599	73/800,766	01/02/1990
1,621,464	73/802,041	11/06/1990
1,620,826	73/802,324	11/06/1990
1,621,302	73/802,671	11/06/1990
1,620,913	73/804,337	11/06/1990
1,621,304	73/804,996	11/06/1990
1,620,797	73/805,026	11/06/1990
1,621,305	73/805,843	11/06/1990
1,621,465	73/806,046	11/06/1990
1,621,698	73/806,726	11/06/1990
1,621,422	73/809,447	11/06/1990
1,621,788	73/810,107	11/06/1990
1,620,917	73/810,629	11/06/1990
1,620,828	73/810,731	11/06/1990
1,620,921	73/813,090	11/06/1990
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1,621,604	73/814,122	11/06/1990
1,621,632	73/814,748	11/06/1990
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1,621,559	73/815,602	11/06/1990
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1,620,927	73/817,114	11/06/1990
1,621,633	73/817,404	11/06/1990
1,621,320	73/818,052	11/06/1990
1,620,830	73/818,197	11/06/1990
1,620,930	73/818,366	11/06/1990
1,620,801	73/818,813	11/06/1990
1,620,935	73/819,114	11/06/1990
1,621,701	73/819,969	11/06/1990
1,621,560	73/820,145	11/06/1990
1,621,427	73/820,462	11/06/1990
1,621,702	73/821,961	11/06/1990
1,621,514	73/822,037	11/06/1990
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1,621,149	73/822,942	11/06/1990
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1,620,941	73/823,291	11/06/1990
1,621,093	73/823,767	11/06/1990
1,621,094	73/823,803	11/06/1990
1,620,942	73/823,871	11/06/1990
1,621,066	73/824,428	11/06/1990
1,620,948	73/824,667	11/06/1990
1,621,356	73/825,856	11/06/1990
1,620,803	73/826,753	11/06/1990
1,620,835	73/826,916	11/06/1990
1,620,951	73/827,295	11/06/1990
1,620,952	73/827,671	11/06/1990
1,621,430	73/828,975	11/06/1990
1,621,097	73/829,706	11/06/1990
1,621,705	73/830,383	11/06/1990
1,621,380	73/830,737	11/06/1990
1,621,099	73/832,032	11/06/1990
1,621,110	73/832,159	11/06/1990
1,599,395	73/832,240	06/05/1990
1,621,225	73/832,797	11/06/1990
1,620,708	73/833,179	11/06/1990
1,614,741	73/833,428	09/25/1990
1,621,434	73/833,533	11/06/1990
1,621,586	73/835,529	11/06/1990
1,620,867	73/836,027	11/06/1990
1,621,478	73/836,246	11/06/1990
1,620,735	73/837,671	11/06/1990
1,620,736	73/837,680	11/06/1990
1,621,169	73/837,967	11/06/1990
1,620,969	74/004,541	11/06/1990
1,621,766	74/004,826	11/06/1990
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1,621,571	74/019,674	11/06/1990
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1,620,788	74/022,332	11/06/1990
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1,621,109	74/031,614	11/06/1990
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1,621,776	74/045,676	11/06/1990
1,620,875	74/800,010	11/06/1990

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

First Delaware Life Insurance Company, Beverly Hills, CA, Registration No. 1,466,581 for the mark "DESTINY", Canc. No. 31,990.

ROCHELLE RICKS
Paralegal
Trademark Trial and Appeal Board, for
ROBERT M. ANDERSON
Deputy Commissioner for
Trademark Operations

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37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of an application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of one of the joint inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Rafiqul Islam) may join in the application by promptly filing an appropriate oath or declaration complying with 37 CFR 1.63. The international application number is PCT/AU98/00926 and was filed on 05 November 1998 in the name of Quantum Energy Systems (International) Pty. Ltd. for the invention entitled "Heat Exchanger for Water Heater Using Heat Pump". The national stage application number is 09/530,808 and has a 35 U.S.C. 371 date of 12 September 2001.

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37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of an application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of one of the joint inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Sarolf Sauer) may join in the application by promptly filing an appropriate oath or declaration complying with 37 CFR 1.63. The international application number is PCT/EP98/03349 and was filed on 04 June 1998 in the name of Sarolf Sauer and Christian Klepsch for the invention entitled "Process for the Subsequent Treatment of Small Glass Particles". The national stage application number is 09/446,128.

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37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of a national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Melanie Ann Clews) may join in the application by promptly filing an appropriate oath or declaration complying with 37 CFR 1.63. The international application number is PCT/IB99/01156 and was filed on 15 April 1999 in the names of Martin William Adendorf, Manogran Moodley, Stephen Brittan Davis and Melanie Ann Clews for the invention entitled A METHOD OF DECOLORIZING A SUGAR LIQUOR. The national stage application number is 09/674,367 and has a 35 U.S.C. 371 date of 05 March 2001.

37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of an application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Edward Lloyd STAHL) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.63. The international application number is PCT/US97/19499 and was filed on October, 29 1997 in the name of Edward Lloyd STAHL for the invention entitled THREE-LEVEL STACKING CONTAINER. The national stage application number is 09/091,911 and has a 35 U.S.C. 371 date of 18 FEBRUARY 1999.

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37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of a national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventors. The inventors whose signatures are missing (Alphonse Graffeo and Jean-Claude Gueraud) may join in the application by promptly filing an appropriate oath or declaration complying with 37 CFR 1.497. The international application number is PCT/FR99/02545 and was filed on 19 October 1999, in the names of Stephane Marty, Alphonse Graffeo, Nicolas Strobbel and Jean-Claude Gueraud for the invention entitled DEVICE FOR PURIFYING FLUID WITH PHOTONIC PULSES. The national stage application number is 09/807,928 and has a 35 U.S.C. 371(c) date of 09 July 2001.

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37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of an application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of one of the joint inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Amir Fuhrmann) may join in the application by promptly filing an appropriate oath or declaration complying with 37 CFR 1.63. The international application number is PCT/US97/03984 and was filed on 12 March 1997 in the name of Terayon Corporation et al for the invention entitled "Data Transmission Using ATM Over Hybrid Fiber Coax". The national stage application number is 09/214,158 and has a 35 U.S.C. 371 date of 17 September 2001.

Trademark Applications That Include Two or More Drawings

An application for registration must be limited to one mark. 37 C.F.R. §2.52(a). Under 37 C.F.R. §2.21(a)(3), an applicant must submit "a clear drawing of the mark" to receive a filing date.

Prior to October 30, 1999, an applicant was required to submit a separate drawing page in order to receive a filing date, and the drawing page was considered a separate element that was not part of the written application. *In re Tetrafluor Inc.*, 17 USPQ2d 1160 (Comm'r Pats. 1990). The Office looked only to the drawing page to determine what the mark was. If one mark appeared on the drawing page and a different mark appeared in the written application, the drawing controlled, and the Office would disregard the mark in the written application.

Effective October 30, 1999, 37 C.F.R. §2.52 was amended to eliminate the requirement for a separate drawing page. If an applicant chooses to submit a separate drawing page, the Office considers this page to be part of the written application, not a separate element. Since October 30, 1999, the policy of the Office has been that the drawing page no longer controls for the purpose of determining what the mark is. If one mark appears on the

drawing page, and another mark (or a materially different version of the mark) appears in the written application, the application is denied a filing date.

Since October 30, 1999, many applicants have been denied filing dates because they submitted applications in which one mark appeared on a separate drawing page and a different version of the mark appeared in the written application. However, in a recent petition decision, *In re L.G. Lavorazioni Grafite SRL*,—USPQ2d—(Comm'r Pats., October 18, 2001), the Office announced that it will no longer deny filing dates in these circumstances. Henceforth, if an applicant submits a separate drawing page showing a mark, and a different mark appears in the written application, the Office will grant a filing date to the application. The mark that appears on the drawing page will control, and the Office will disregard the mark in the written application. The applicant will not be permitted to amend the mark if the amendment is a material alteration of the mark on the drawing page. 37 C.F.R. §2.72.

This policy change is effective as of October 18, 2001, the date of the aforementioned petition decision. An applicant who was denied a filing date prior to that date may petition the Director under 37 C.F.R. §2.146 to restore the filing date. Under 37 C.F.R. §2.146(d), the petition must be filed within two months of the mailing date of the Notice of Incomplete Trademark Application, or it will be denied as untimely. This time limit will be strictly enforced.

The Office will continue to deny filing dates when an applicant submits two or more drawing pages showing materially different marks or two or more different marks embedded in a written application that is not accompanied by a drawing page.

ANNE H. CHASSER
Commissioner for Trademarks

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 5,106,829, Syed B. Quadri, Louis E. Toth, Michael S. Osofsky, Steven H. Lawrence, Donald U. Gubser, Stuart A. Wolf, MEHTOD OF MAKING SUBSTANTIALLY SINGLE PHASE SUPERCONDUCTING OXIDE CERAMICS HAVING A TC ABOVE 85 DEGREES K, Interference No. 103,183, final judgment adverse to the patentees rendered August 22, 2001, as to claims 1-24.

Patent No. 5,064,802, James C. Stevens, David R. Neithamer, METAL COMPLEX COMPUNDS, Interference No. 103,112, final judgment adverse to the patentees rendered September 29, 2001, as to claims 1-10.

Patent No. 5,132,380, James C. Stevens, David R. Neithamer, METAL COMPLEX COMPOUNDS, Interference No. 103,113, final judgment adverse to the patentees rendered September 28, 2001, as to claim 3.

Patent No. 5,132,380, James C. Stevens, David R. Neithamer, METAL COMPLEX COMPOUNDS, Interference No. 103, 114, final judgment adverse to the patentees rendered September 28, 2001, as to claims 1, 2 and 4-9.

WANDA M. TIGNER, *Sup'v. Legal Instruments Examiner*
Board of Patent Appeals & Interferences
(703) 308-9797

Errata

"All reference to Patent No. 6,323,290 to Daniel Zimmerman of Stratford, CT for LECTROSTATIC-DISSIPATIVE MULTIPOLYMER COMPOSITIONS appearing in the Official Gazette of November 27, 2001 should be deleted since no patent was granted."

"All reference to Patent No. 6,324,194 to Luis A. Spinelli, et al of Sunnyvale, CA for CW FAR-UV LASER SYSTEM WITH TWO ACTIVE RESONATORS appearing in the Official Gazette of November 27, 2001 should be deleted since no patent was granted."

"All reference to Patent No. 6,324,221 to Akihiko Matsuoka, et al of Yokohama-Shi, Japan for TRANSMISSION APPARATUS appearing in the Official Gazette of November 27, 2001 should be deleted since no patent was granted."

"All reference to Patent No. 6,324,321 to Suning Tang, et al of Austin, TX for COMPRESSION-MOLDED THREE-DIMENSIONAL TAPERED UNIVERSAL WAVEGUIDE COUPLERS appearing in the Official Gazette of November 27, 2001 should be deleted since no patent was granted."

"All reference to Patent No. 6,324,506 to Donald T. Tang, et al of Beijing, China for APPARATUS AND METHOD FOR AUTOMATICALLY GENERATING PUNCTUATION MARKS CONTINUOUS SPEECH RECOGNITION appearing in the Official Gazette of November 27, 2001 should be deleted since no patent was granted."

"All reference to Patent No. 6,326,643 to Shunpei Yamazaki, et al of Kanagawa, Japan for SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING THE SAME appearing in the Official Gazette of December 04, 2001 should be deleted since patent was granted."

Certificates of Correction for November 27, 2001

B1-4,726,193	5,773,475	5,877,178	5,955,574
D. 430,025	5,773,863	5,880,144	5,958,794
D. 437,538	5,776,780	5,884,187	5,959,775
D. 442,428	5,780,261	5,889,898	5,960,395
RE. 37,029	5,783,012	5,894,356	5,962,726
RE. 37,072	5,783,120	5,897,347	5,962,926
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5,284,935	5,792,634	5,905,305	5,965,989
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5,689,122	5,830,675	5,929,099	6,004,297
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Summary of Final Decisions Issued by the Trademark Trial and Appeal Board

November 5-9, 2001

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
11-7	CANC	28,715	Avon Products, Inc. v. Something Old, Something New, Inc.	fraud; non-use of mark as of either the time of filing of the statement of use or as of the registration date); genericness or mere descriptiveness	Petition to cancel granted, but only on bases of non-use and mere descriptiveness		"BIRTHSTONE" [perfumes and perfume toilet soaps]		No
11-7	OPP	110,696	U.S. Olympic Committee v. Calcados Azaleia S.A.	2(d); 2(a) [false suggestion of a connection]; applicability of the 1998 Olympic and Amateur Sports Act amendment to the Amateur Sports Act of 1978	Opposition Sustained (but only as to 2(d) ground for opposition and only as to use of opposer's pleaded mark for footwear)	"OLYMPIC" [a variety of goods, not including clothing or footwear]; "OLYMPIAN" [golf clubs; magazines]; "OLYMPICAP" [caps, hats and visors]; "OLYMPICS USA" (and design) [footwear, namely, shoes]	"OLYMPIKUS" [footwear]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
11-8	EX	75/765,120	Polygenyx, Inc.	2(e)(1)	Refusal Reversed		"POLYGENYX" [analytical products for genotyping and DNA sequencing, namely, test kits for diagnostic, prognostic and pharacogenomic applications; for life science research; for DNA-fingerprinting; and for identification and marker-assisted selection of individuals, for use with humans, plants, animals, fish, and microorganisms; and analytical services for the same]		No
11-9	EX EX	75/721,622 75/721,624	Cimarron Tire Auto Performance Specialist, Inc.	2(d)	Refusal Affirmed (in both cases)		"CIMARRON TIRE" and "C CIMARRON TIRE AUTO PERFORMANCE SPECIALIST (and design) [*both marks for* retail automobile parts and accessories stores featuring automobile tires **and** automobile maintenance, repair and service]	"CIMARRON" (in stylized lettering) [motor vehicles, namely, automobiles]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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Some correspondence may only be submitted via the Office's electronic filing system (EFS). For example, the following publication requests must be submitted via EFS:

a request for publication of an application as amended during examination (37 CFR 1.215(c));
a request for redacted publication (37 CFR 1.217(b));
a request for voluntary publication of an application filed before November 29, 2000 (37 CFR 1.221(a)); or
a request for republication of an application that has already been published (37 CFR 1.221(a)).

Instructions on how to file such a publication request via EFS are located on the Office's Electronic Business Center on the Office's Internet Web site http://www.uspto.gov <http://www.uspto.gov>) under the Electronic Business Center section.

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Washington, D.C. 20231

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2011 South Clark Place
Customer Window, Box _____
Crystal Plaza Two, Lobby, Room 1B03
Arlington, Virginia 22202

Box Designations	Explanation
Box REISSUE	All new and continuing Reissue application filings.
Box 12	Contributions to the Examiner Education Program.
Box 313(b)	Petitions under 37 CFR 1.313(c) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for a continuing application or a request for continued examination (RCE).
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box CPA	Requests for Continued Prosecution Applications (CPA's) under 37 CFR 1.53(d).
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications which do not request expedited examination under 37 CFR 1.155.
Box Expedited Design	Only to be used for the initial filing of design applications accompanied by a request for expedited examination under 37 CFR 1.155. (Design applicants seeking expedited examination may alternatively file a design application and corresponding request under 37 CFR 1.155 by hand-delivering the application papers and request directly to the Design Group Director's office.)
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection.)
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PGPUB	Correspondence regarding publication of patent applications not otherwise provided.
Box PGPUB - ABD	Petitions under 37 CFR 1.138 to expressly abandon an application to avoid publication of the application.
Box PGPUB DRAWINGS	Drawings to be included in a patent application publication (replacement drawings for drawings included with a patent application on filing).
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box RCE	Requests for continued examination under 37 CFR 1.114.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or application number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Arlington, Virginia 22202-3513

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Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation* and disciplinary proceedings; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Mail related to refund requests.
Box 17	Invoices directed to the Office of Finance.
Box 24	Mail for the Office of Independent Inventor Programs.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Correspondence	Correspondence related to maintenance fees other than payments of maintenance fees in patents. Payments of maintenance fees in patents not submitted electronically over the Internet at www.uspto.gov should be mailed to: United States Patent and Trademark Office P.O. Box 371611 Pittsburgh, PA 15250-1611
Box OED	Mail for the Office of Enrollment and Discipline.
Deposit Account Replenishments	To send payment to replenish deposit accounts Commissioner of Patents and Trademarks P.O. Box 70541 Chicago, IL 60673
Refund Requests	To send refund requests Commissioner of Patents and Trademarks Box 16 Washington, D.C. 20231

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Each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials.

All information is available for use by the public free of charge. However, there may be charges associated with the use of on-line systems, photocopying and related services.

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Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCI^3) at the Sunnyvale Public Library in Sunnyvale, California and at the South Central Intellectual Property Partnership at Rice (SCIPPR) at the Fondren Library of Rice University in Houston, Texas.

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	Birmingham Public Library	(205) 226-3620
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Arizona	Tempe: Noble Library, Arizona State University	(480) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Connecticut	Hartford Public Library	(860) 543-8628
	New Haven Free Public Library	(203) 946-8130
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(765) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 242-6541
Kansas	Wichita: Ablah Library, Wichita State University	(316) 978-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(225) 388-8875
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(734) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(231) 591-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 630-6120
Mississippi	Jackson: Mississippi Library Commission	(601) 961-4111
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Las Vegas - Clark County Library District	(702) 733-1165
	Reno: University of Nevada, Reno Library	(775) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(973) 733-7779
	Piscataway: Library of Science and Medicine, Rutgers University	(732) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412

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	Stony Brook: Engineering Library, State University of New York	(631) 632-7148
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-2935
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(330) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6971
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-3022
	Dayton: Paul Laurence Dunbar Library, Wright State University	(937) 775-3521
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Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
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Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 2022
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South Carolina	Clemson University Libraries	(864) 656-3024
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Tennessee	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2717
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
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Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
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TECHNOLOGY CENTERS		DIRECTORS	Telephone & FAX Numbers Area Code 703	New Case Date*
1600	**BIOTECHNOLOGY, ORGANIC**			
1610	Organic chemistry, bio-affecting and body treating composition	John J. Doll	308-1123 FAX 308-2742	08/28/00
1620	Carbohydrates, Nonhetrocyclic Chemistry and Uses	Bruce Kisliuk	306-2928 FAX 308-2742	02/18/00
1630	Recombinant molecular and microbiology, multicellular organisms	John J. Doll	308-1123 FAX 308-2742	08/03/00
1640	Immunology and Plants	Bruce Kisliuk	306-2928 FAX 308-2742	05/04/00
1650	Non-recombinant molecular and microbiology, non-immuno proteins and peptides	Bruce Kisliuk	306-2928 FAX 308-2742	08/04/00
1660	Asexually Reproduced Plants	John J. Doll	308-1123 FAX 308-2742	10/30/00
1700	**CHEMICAL, MATERIALS ENGINEERING**			
1710	Synthetic resins	Jacqueline M. Stone	308-1495 FAX 305-3599	01/13/00
1720	Fluid separation and agitation, metal foundry, welding, plastic molding apparatus, fuels and related compositions	Richard V. Fisher	308-1193 FAX 305-3599	08/07/00
1730	Glass and paper making, tobacco, non-metallic molding, adhesive bonding, tires and coating apparatus	Richard V. Fisher	308-1193 FAX 305-3599	01/27/00
1740	Metallurgy, electrochemistry, cleaning, disinfecting, sterilizing, analytical chemistry and wave energy	Richard V. Fisher	308-1193 FAX 305-3599	09/28/99
1750	Chemical products and processes, solar cells and sputtering apparatuses	Richard V. Fisher	308-1193 FAX 305-3599	04/19/00
1760	Food technology, petroleum processing, coating and etching	Jacqueline M. Stone	308-1495 FAX 305-3599	04/20/00
1770	Stock materials and miscellaneous articles	Jacqueline M. Stone	308-1495 FAX 305-3599	12/23/99
2100	**COMPUTER ARCHITECTURE, SOFTWARE, ELECTRONIC COMMERCE**			
2120	Miscellaneous computer applications	Margaret A. Focarino	306-5484 FAX 305-3719	01/06/99
2130	Cryptography, security	John J. Love	306-5484 FAX 305-3719	02/02/99
2150	Computer networks	Allen MacDonald	305-9700 FAX 308-5355	09/16/98
2160	Electronic commerce	John J. Love	306-5484 FAX 305-3719	04/09/99
2170	Graphical user interface, data bases	Margaret A. Focarino	306-5484 FAX 305-3719	04/16/99
2180	Computer architecture	Allen MacDonald	305-9700 FAX 308-5355	04/06/99
2600	**COMMUNICATIONS**			
2610	Television	Joseph J. Rolla	305-9700 FAX 308-5401	12/15/97
2620	Image analysis, fax	Joseph J. Rolla	305-9700 FAX 308-5401	09/28/98
2630	Digital, optical, and general communications	Jin F. Ng	305-4800 FAX 308-5401	10/09/98

TECHNOLOGY CENTERS		DIRECTORS	Telephone & FAX Numbers Area Code 703	New Case Date*
2640	Audio, speech processing and wired telephone	James L. Dwyer	305-4800 FAX 308-5401	05/18/98
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2800	**SEMICONDUCTORS, ELECTRICAL AND OPTICAL SYSTEMS AND COMPONENTS**			
2810	Static memory and digital logic	Rolf G. Hille	306-3431 FAX 308-7725	01/04/00
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3680	Machine elements and power transmissions	Al Lawrence Smith	308-1020 FAX 305-7687	08/18/00
3700/ 2900	**MECHANICAL ENGINEERING, MANUFACTURING AND PRODUCTS, DESIGNS**			
3710	Amusement and education devices	Ethel Rollins-Cross	308-1078 FAX 305-3579	01/07/00
3720	Packages and containers, manufacturing devices and processes, machine tools and hand tools	Ethel Rollins-Cross	308-1078 FAX 305-3579	12/13/99
3730	Medical instruments, diagnostic equipment, treatment devices, surgery and surgical supplies	John E. Kittle	308-0873 FAX 305-3591	08/21/00
3740	Thermal and combustion technology, motive and fluid power systems	Richard Bertsch	308-0975 FAX 308-4741	07/24/00
3750	Fluid handling and dispensing, textile manufacturing and apparel	Richard Bertsch	308-0975 FAX 308-4741	04/04/01
3760	Body treatment, kinestherapy, and exercising	John E. Kittle	308-0873 FAX 305-3591	09/20/00
2900	Designs	John E. Kittle	308-0873 FAX 305-3590	11/19/99

* A communication from the examiner should have been received in most applications filed prior to this date.

TRADEMARK OPERATION

Nicholas P. Godici, Acting Director of the United States Patent and Trademark Office
Ann Chasser, Commissioner for Trademarks
Condition of Trademark Applications as of November 1, 2001

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Jerry Price, Managing Attorney, (703) 308-9101—North Tower, 10th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/25/01	12/04/00
Law Office 102—Thomas Shaw, Managing Attorney, (703) 308-9102—South Tower, 5th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/12/01	08/07/01
Law Office 103—Michael Hamilton, Managing Attorney, (703) 308-9103—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/06/01	06/29/01
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308-9104—South Tower, 6th Floor, Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	07/30/01	05/29/01
Law Office 105—Thomas Howell, Managing Attorney, (703) 308-9105—South Tower, 3rd Floor, Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/27/01	01/12/01
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308-9106—North Tower, 6th Floor, Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/22/01	05/10/01
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308-9107—North Tower, 7th Floor, Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/28/01	08/13/01
Law Office 108—David Shallant, Managing Attorney, (703) 308-9108—South Tower, 8th Floor, Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/06/01	05/17/01
Law Office 109—Ronald Sussman, Managing Attorney, (703) 308-9109—South Tower, 8th Floor, Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/06/01	08/04/01
Law Office 110—Christopher A. F. Pedersen, Managing Attorney, (703) 308-9110—South Tower, 7th Floor, Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/10/01	08/08/01
Law Office 111—Craig Taylor, Managing Attorney, (703) 308-9111—North Tower, 10th Floor, Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/28/01	04/09/01
Law Office 112—Janice O'Lear, Managing Attorney, (703) 308-9112—South Tower, 5th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/12/01	07/23/01
Law Office 113—Meryl Hershkowitz, Managing Attorney, (703) 308-9113—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/22/01	05/17/01
Law Office 114—Margaret Le, Managing Attorney, (703) 308-9114—South Tower, 6th Floor, Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/15/01	08/15/01
Law Office 115—Tomas Vlcek, Managing Attorney, (703) 308-9115—North Tower, 3rd Floor, Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	08/30/01	12/12/00

**Collective Marks—Class 200
**Certification Marks—Classes A & B

Office of Trademark Services—Ronald Williams, Director, (703) 305-1222 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Dewitt Howard, Acting Manager, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—(703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	09/20/01	—0—
Renewals (All Classes)	07/09/01	—0—
Section 12(c) Publications (All Classes)	09/13/01	—0—

1. ** Assigned to all Law Offices

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305-8747 through (703) 305-9752 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

DECEMBER 18, 2001

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

US 5,500,576 C1 (4505th)

LOW HEIGHT BALLAST FOR FLUORESCENT LAMPS

Randy G. Russell, Glen Ellyn; Kent E. Crouse, Hanover Park; Peter W. Shackle, Arlington Heights, and Ronald J. Bezdon, Antioch, all of Ill., assignors to Energy Savings, Inc., Schaumburg, Ill.

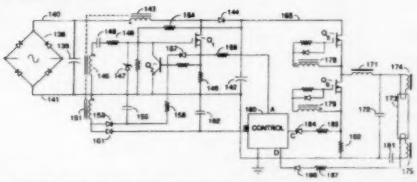
Reexamination Request No. 90/005,223 Jan. 19, 1999.

Reexamination Certificate for Patent 5,500,576, issued Mar. 19, 1996, Appl. No. 227,953, Apr. 15, 1994.

Continuation-in-part of application No. 08/148,295, filed on Nov. 8, 1993.

Int. Cl. H05B *37/02*

U.S. Cl. 315—307



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **10–13** is confirmed.

Claims **1**, **2**, **7** and **9** are cancelled.

Claims **3**, **6** and **8** are determined to be patentable as amended.

Claims **4** and **5** dependent on an amended claim, are determined to be patentable.

New claims **14** and **15** are added and determined to be patentable.

3. **[**The ballast as set forth in claim **2]** *An electronic ballast for powering a gas discharge lamp from an AC input voltage, said ballast having a height equal to or less than one inch, a power factor ≧0.9, and a harmonic distortion ≦10 percent, said ballast comprising:*

a converter for converting said AC input voltage into pulses of direct current at a high voltage, said converter including means for varying the current drawn by said converter in phase with said AC input voltage by changing the frequency of said pulses;

a control circuit including an output coupled to said converter for shutting off said converter;

a capacitor coupled to the output of said converter for storing said high voltage;

a driven, half-bridge inverter powered by the energy stored in said capacitor, said inverter having a series resonant, direct coupled output for connection to said lamp;

wherein said converter includes a first magnetic and said inverter includes a second magnetic and said first magnetic and said second magnetic have separate cores; and

wherein said control circuit includes a third magnetic**[**, wherein**]** *and* said third magnetic has a core separate from said first magnetic and said second magnetic.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

US RE37,470 E
SUBSTRATE PROCESSING APPARATUS AND SUBSTRATE PROCESSING METHOD

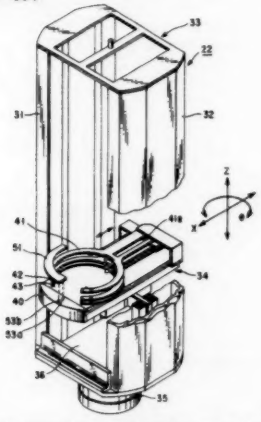
Jun Ohkura; Naruaki Iida, both of Kumamoto; Hiroyuki Kudou, Kikuchi-gun; Masanori Tateyama, Kumamoto, and Yasuhiro Sakamoto, Kamoto-gun, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Original No. 5,664,254, dated Sep. 2, 1997, Appl. No. 08/594,937, filed on Jan. 31, 1996. This application Sep. 2, 1999, Appl. No. 388,589.

Claims priority, application Japan, Feb. 2, 1995, 7-039254; Feb. 9, 1995, 7-046413

Int. Cl. G03D *5/00*

U.S. Cl. 396—604 **16 Claims**



1. A substrate processing apparatus for performing a plurality of processes to a substrate comprising:

a common path[, extending in a Y-axis direction,] in which one substrate or a plurality of substrates are conveyed;

a plurality of process units stacked on [both sides of] said common path to constitute multi-stage structures *and surrounding said common path*;

a main handler [moved in said common path in the Y-axis direction and] rotated about a Z axis at an angle θ to load/unload the substrate into/from said process units;

an arm section arranged to move in said main handler in the Z-axis direction;

a plurality of holding arms arranged in said arm section to constitute a multi-stage structure so as to respectively hold the substrates, each holding arm being advanced and retreated on an X-Y plane from said arm section, and wherein one holding arm of said plurality of holding arms is located at a position higher than that of another holding arm of said plurality of holding arms, [said one holding arm having a portion which is brought into direct contact with a substrate, said portion being made of a material of a friction coefficient higher than that of a material of a non-contact portion];

detection means, arranged in said arm section, for detecting a holding state of the substrate held in each of said plurality of holding arms; and

control means for controlling an operation of said main handler, an operation of said arm section, and operations of said plurality of holding arms on the basis of a detection result from said detection means *wherein said control means moves the arm section in a Z-axis direction while rotating the main handler about a Z axis at an angle* θ;

wherein said control means advances or retreats each holding arm while operating at least one of said main handler and said arm section, and causes said detection means to detect the holding state of the substrate held by each holding arm before said holding arm reaches a corresponding one of said process units.

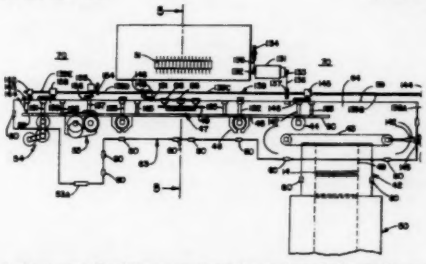
US RE37,471 E
VIAL FILLING APPARATUS

Theodore W. Jagger, White Bear Lake, Minn., assignor to Robert Bosch Packaging Technology, Inc., Brooklyn Park, Minn.

Original No. 5,673,535, dated Oct. 7, 1997, Appl. No. 08/777,992, filed on Jan. 2, 1997. Continuation of application No. 08/205,041, filed on Mar. 2, 1994, now abandoned. Application for reissue Oct. 7, 1999, Appl. No. 414,913.

Int. Cl. B65B *3/28; 3/32*

U.S. Cl. 53—282 **88 Claims**



1. Apparatus for filling containers in a substantially sterile environment, comprising:

elongated frame means;

upright wall means carried by the elongated frame means and extending over a substantial portion of its length, the upright wall means dividing the apparatus into an elongated *substantially contamination free* sterile zone and an elongated non-sterile zone disposed in adjacent relation;

elongated enclosure means carried by the elongated frame means and cooperating with the upright wall means to define said elongated sterile zone;

a plurality of operating stations each including operating means disposed in substantially linear relation within said elongated sterile zone, a given operation being performed with respect to said containers at each operating station by the associated operating means;

transport means disposed within said elongated sterile zone for transporting containers through said plurality of operating stations;

said plurality of operating means comprising:

first container transfer means for transferring empty containers from a point outside said elongated sterile zone to said transport means;

pharmaceutical container filling means;

means for closing said filled containers; and

second container transfer means for transferring filled containers from said transport means to a point outside said elongated sterile zone;

actuating means for said transport means and for each of said operating means, each of said actuating means being disposed within said non-sterile zone; and

connection means for operatively connecting each of said actuating means with its associated operating means, each of said connection means extending through a sealed opening in said upright wall means.

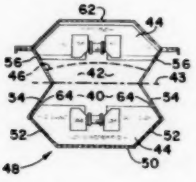
US RE37,472 E
DRAG CONVEYOR SYSTEM FOR PARTICULATE MATERIAL

Jon F. Baker, 6500 Pasco Montra Rd., Sidney, Ohio 45365

Original No. 5,947,261, dated Sep. 7, 1999, Appl. No. 08/905,012, filed on Aug. 11, 1997. Application for reissue Feb. 23, 2000, Appl. No. 511,426.

Int. Cl. B65G *19/06*

U.S. Cl. 198—727 **21 Claims**



13. In a drag conveyor system for moving particulate material from an inlet at one location to an outlet at a remote location: said conveyor system comprising an elongated endless link chain having upper and lower runs movable in a vertical plane about a drive sprocket at one end of said locations and a tail sprocket adjacent the other of said locations, motor means for driving said drive sprocket, an elongated trough having a bottom, opposed sides, an open top and a cover for said open top, said trough encompassing said chain throughout its length, a plurality of material-carrying paddles spaced longitudinally about said chain and extending laterally and radially outward therefrom; said paddles having their radially outer edges corresponding in shape and size to the bottom of said trough to drag material introduced into said trough at said inlet toward and to said outlet, said trough having:

a lower material-carrying section encompassing the lower run of said chain and paddles moving along said lower run; an upper return run section immediately above said lower section and encompassing the upper run of said chain and paddles, said upper section having elongated bearing surface portions thereof directed downwardly and inwardly from opposite sides of said trough for edgewise frictional supporting of inner laterally outward edges of the paddles in their passage through said return run section from said outlet to said inlet; and

said paddles being relatively flat and having a thickness in a direction normal to said chain and further having outer edges which ride frictionally against the trough bottom when carrying material toward said outlet in said lower material-carrying section, and said paddles further having opposed laterally outward inner edges inclined at the same angle as said bearing surface portions for riding frictionally on and providing the sole support for the chain and paddles on the inwardly-directed bearing surface portions of said upper section while travelling through said upper return run section, said angled inner edges of the paddles providing a substantial bearing surface of said paddles against the bearing surface portions.

US RE37,473 E
DIFFRACTION ANOMALY SENSOR HAVING GRATING COATED WITH PROTECTIVE DIELECTRIC LAYER

William A. Challener, Grant, Minn., assignor to Imation Corp., Oakdale, Minn.

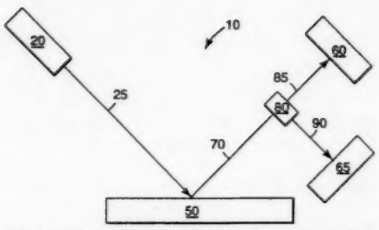
Original No. 5,925,878, dated Jul. 20, 1999, Appl. No. 08/915,357, filed on Aug. 20, 1997. Application for reissue Feb. 3, 2000, Appl. No. 498,758.

Int. Cl. G02F *1/01*

U.S. Cl. 250—225 **34 Claims**

1. A sensor for assaying a substance in a sample comprising:

a substrate having a plurality of parallel grooves in a surface;



a metal layer formed outwardly from the surface of the substrate, the metal layer substantially conforming to the grooved surface of the substrate; and

a dielectric layer formed outwardly from the metal layer, [the dielectric layer for suppressing reflection of incident light having a polarization parallel to the grooves of the substrate] *wherein for light having a plane of incidence perpendicular to the grooves of the substrate the dielectric layer suppresses a component of the light having a polarization parallel to the grooves of the substrate.*

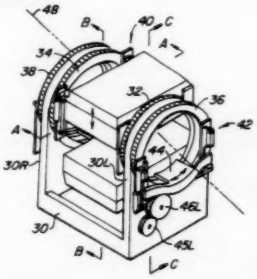
US RE37,474 E
ADJUSTABLE DUAL-DETECTOR IMAGE DATA ACQUISITION SYSTEM

Paul Hug, Saratoga; Horace H. Hines, and Mark L. Lamp, both of San Jose, all of Calif., assignors to ADAC Laboratories, Milpitas, Calif.

Original No. 5,444,252, dated Aug. 22, 1995, Appl. No. 08/154,239, filed on Nov. 18, 1993. Continuation-in-part of application No. 07/704,759, filed on May 23, 1991, now Pat. No. 6,184,530. Application for reissue Aug. 21, 1997, Appl. No. 916,985.

Int. Cl. G01T *1/164;1/166*

U.S. Cl. 250—363.08 **13 Claims**



10. A medical imaging system for acquiring image data of an object, said system comprising:

a first pair of rotatable members rotatable about and substantially centered on a lateral axis;

a second pair of rotatable members rotatable about and substantially centered on a lateral axis;

a first radiation detector coupled to and disposed between the first pair of rotatable members; and

a second radiation detector coupled to and disposed between the second pair of rotatable members, the second pair of rotatable members movable with respect to the first pair of rotatable members so as to allow the angular displacement between the first and second detectors about the lateral axis to be varied.

US RE37,475 E

LOGIC SYNTHESIS METHOD AND SEMICONDUCTOR INTEGRATED CIRCUIT

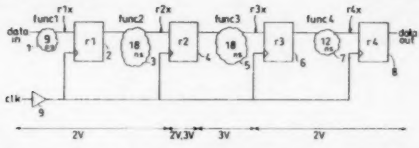
Kazutake Ohara, Ibaraki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Original No. 5,517,132, dated May 14, 1996, Appl. No. 08/375,413, filed on Jan. 18, 1995. Application for reissue May 13, 1998, Appl. No. 76,703.

Claims priority, application Japan, Jan. 19, 1994, 6-004024

Int. Cl. H01L *25/00*; **H03K** *19/177*

U.S. Cl. 326—41 **31 Claims**



24. A method for designing a semiconductor integrated circuit, the semiconductor circuit including a plurality of combinational circuits, each of the plurality of combinational circuits being provided on an associated one of signal propagation paths, said method comprising the steps of:

generating a first combinational circuit including a first logic gate driven by a low-voltage source and a second logic gate driven by a high-voltage source, said second logic gate also forming a portion of a first signal propagation path which is a critical path, said first logic gate and said second logic gate also forming a portion of a second signal propagation path which is different from said first signal propagation path;

determining whether an output of the first logic gate in said first combinational circuit is coupled to an input of said second logic gate in said first combinational circuit; and

if so, replacing the first logic gate in the first combinational circuit with a logic gate driven by the high-voltage source.

US RE37,476 E

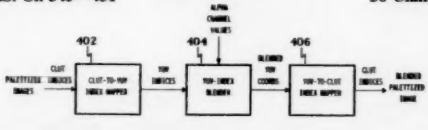
ALPHA BLENDING PALETTIZED IMAGE DATA

Richard Gerber, San Francisco, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Original No. 5,831,604, dated Nov. 3, 1998, Appl. No. 08/657,402, filed on Jun. 3, 1996. Application for reissue Mar. 28, 2000, Appl. No. 538,666.

Int. Cl. G06T *5/00*

U.S. Cl. 345—431 **30 Claims**



17. A method for blending image data comprising:

mapping a first set and a second set of pelletized image data having corresponding pixels expressed in indices of a color lookup table (CLUT) to an index space;

generating blended pixels by blending said corresponding pixels of said first and second sets of pelletized image data in said index space, said blending being based, at least in part, on at least one alpha-channel value; and

mapping said blended pixels to said CLUT indices.

US RE37,477 E

INTEGRATED CIRCUIT PROTECTED AGAINST ELECTROSTATIC DISCHARGES, WITH VARIABLE PROTECTION THRESHOLD

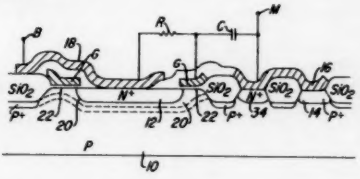
Francois Tailliet, Epinay sur Seine, and Jacek Kowalski, Trets, both of France, assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Original No. 4,890,187, dated Dec. 26, 1989, Appl. No. 07/264,202, filed on Oct. 28, 1988. Continuation of application No. 08/320,124, filed on Oct. 7, 1994, now abandoned, which is a continuation of application No. 08/149,719, filed on Nov. 9, 1993, now abandoned, which is a continuation of application No. 07/814,400, filed on Dec. 23, 1991, now abandoned. Application for reissue Sep. 21, 1995, Appl. No. 532,011.

Claims priority, application France, Nov. 6, 1987, 87 15405

Int. Cl. H02H *9/04*

U.S. Cl. 361—111 **18 Claims**



6. In an integrated circuit having a reference terminal and an input terminal to be protected, a structure for protecting the integrated circuit against overvoltages, comprising:

a diode connected to the input terminal, said diode being capable of being set in avalanche conduction in case an overvoltage is applied between the input terminal and the reference terminal in a direction corresponding to a reverse bias of said diode; and

means for altering an avalanche threshold voltage of said diode, said altering means connected to the input terminal, and said altering means responsive to a rising slope of the input voltage to lower the diode avalanche threshold voltage when the input voltage is rising relatively fast, and raising the diode avalanche threshold voltage when the input voltage is rising relatively slowly.

US RE37,478 E

1-(ARYLTHIOALKYL, ARYLAMINOALKYL, OR ARYLMETHYLENEALKYL)-4-(HETEROARYL)PIPERAZINES AND RELATED COMPOUNDS USEFUL AS ANTIPSYCHOTICS AND ANALGESICS

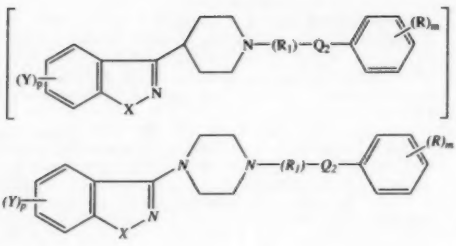
Joseph T. Strupczewski, Fleming; Grover C. Helsley, Stockton; Edward J. Glamkowski, Warren; Yulin Chiang, Convent Station, all of N.J., and Kenneth J. Bordeau, Kintersville, Pa., assignors to Aventis Pharmaceuticals, Inc., Kansas City, Mo.

Original No. 5,583,145, dated Dec. 10, 1996, Appl. No. 08/466,895, filed on Jun. 6, 1995. Division of application No. 08/329,000, filed on Oct. 25, 1994, now Pat. No. 5,776,963, which is a continuation-in-part of application No. 08/144,265, filed on Oct. 28, 1993, now abandoned, which is a continuation-in-part of application No. 07/969,383, filed on Oct. 30, 1992, now Pat. No. 5,364,866, which is a continuation-in-part of application No. 07/788,269, filed on Nov. 5, 1991, now abandoned, which is a continuation-in-part of application No. 07/944,705, filed on Sep. 5, 1991, now abandoned, which is a continuation of application No. 07/619,825, filed on Nov. 29, 1990, now abandoned, which is a continuation of application No. 07/456,790, filed on Dec. 29, 1989, now abandoned, which is a continuation-in-part of application No. 07/354,411, filed on May 19, 1989, now abandoned. Application for reissue Dec. 9, 1998, Appl. No. 207,910.

Int. Cl. A61K *31/445;31/495;* **C07D** *401/04;403/04;405/04*

U.S. Cl. 514—254.04 **49 Claims**

1. A compound of the formula:



wherein

X is —O—, —S—, —NH—, or [—N(R_2)] —*N*(R_2)—;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, *alkoxycarbonyl*, and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is [—$CR_{24}R_{27}$—($CR_{23}R_{27}$)$_n$—] —$CR_{24}R_{27}$—($CR_{23}R_{24}$)$_n$—$CR_{24}R_{27}$—, where n is 0, 1, 2 or 3; or

[—CHR_{24}CH=CH—CHR_{24}] —CHR_{24}—*CH=CH*—CHR_{24}—,

—CHR_{24}—C≡C—CHR_{24}—,

—CHR_{24}—CH=CH—$CR_{23}R_{24}$—CHR_{24}—,

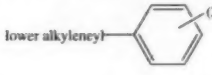
—CHR_{24}—$CR_{23}R_{24}$—CH=CH—CHR_{24}—,

[—CHR_{24}—CH≡C—$CR_{23}R_{24}$—CHR_{24}] —CHR_{24}—C≡C—$CR_{23}R_{24}$—CHR_{24}—, or

[—CHR_{24}—$CR_{23}R_{24}$—C≡C—CHR_{24}] —CHR_{24}—$CR_{23}R_{24}$—C≡C—CHR_{24}—,

the —CH=CH— bond being cis or trans;

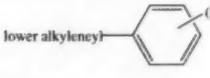
R_{23} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy, (C_1–C_{18})alkoxy, aryloxy, aryl(C_1–C_{18})alkyloxy, (C_1–C_{18})alkanoyloxy, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, [phenyl(C_1–C_6)alkyloxy,] aryl(C_1–C_{18})alkoxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_{18})alkyl or



where

Z_1 is lower alkyl, —OH, lower alkoxy, —CF_3, —NO_2, —NH_2, or halogen, and p is as previously defined;

R_{24} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkyloxy, aryl(C_1–C_{18})[alkoxy]*alkyloxy*(C_1–C_6)alkyl or (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl or



where

Z_1 and p are as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S;

Q_2 is [S, NH, or —CH_2—] —*S*—, —*NH*—, *or* —CH_2—;

R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, monoalkylaminocarbonyl, [diakylaminocarbonyl] *dialkylaminocarbonyl*, formyl,

—C(=O)—alkyl,

—C(=O)—O-alkyl,

—C(=O)-aryl,

—C(=O)-heteroaryl,

—CH(OR_7)-alkyl,

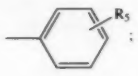
—C(=W)-alkyl,

—C(=W)-aryl, or

—C(=W)-heteroaryl;

alkyl is (C_1–C_{18})alkyl;

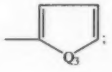
aryl is phenyl or



where

R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower [monoakylamino] *monoalkylamino*, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

heteroaryl is



Q_3 is —O—, —S—, —NH—, —CH=N—;

W is CH_2 or CHR_8 or N—R_9;

R_7 is hydrogen, lower alkyl, or alkanoyl;

R_8 is lower alkyl;

R_9 is hydroxy, alkoxy, or —NHR_{10}; and

R_{10} is hydrogen, lower alkyl, [C_1–C_3 acyl] (C_1–C_3)*acyl*, aryl, —C(=O)-aryl or —C(=O)— heteroaryl, where aryl and heteroaryl are as defined above; and

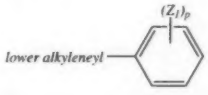
m is 1, 2 or 3;

[with the exclusion of a compound wherein X is —S—, Q_2 is —CH_2—, Y is hydrogen, lower alkyl, lower alkoxy, halogen, hydroxy or trifluoromethyl, and p is **1** or **2**;

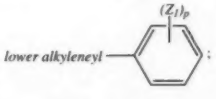
with the exclusion of a compound wherein X is —N(R_2)—, Q_2 is —CH_2—, R is chlorine, fluorine, bromine, iodine, lower alkyl, lower alkoxy, lower alkyl thio, lower monoalkylamino, lower dialkylamino, amino, cyano, hydroxy, or trifluoromethyl, R_2 is aryl, Y is hydrogen, halogen, lower alkyl, lower alkoxy or hydroxy, and p is **1** or **2**;

with the exclusion of a compound wherein X is —NH— or —N(R_2)—, R_2 is lower alkyl, aryl lower alkyl, or phenylsulfonyl, Y is hydrogen, halogen, lower alkyl, lower alkoxy, or hydroxy, p is **1** or **2**; and Q_2 is —CH_2—;]

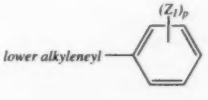
with the proviso that R_{23} is not hydrogen, (C_1–C_{18})linear alkyl, phenyl, or



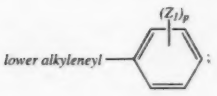
when R_{27} is hydrogen and R_{24} is hydrogen, (C_{1-C18})linear alkyl, phenyl, or



with the proviso that R_{24} is not hydrogen, (C_1–C_{18})linear alkyl, phenyl, or



when R_{27} is hydrogen and n is 0; or when R_{27} is hydrogen and R_{23} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, or



or when R_1 *is* $-CHR_{24}-CH=CH-CHR_{24}-$ *or* $-CHR_{24}-C\equiv C-CHR_{24}-$;

and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4-C_{18})*alkanoyl group; in addition, any nitrogen atom may alternatively by acylated with a* (C_4-C_{18})*alkoxycarbonyl group; and*

all geometric, optical, and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

US RE37,479 E

SPINAL FIXATION DEVICE

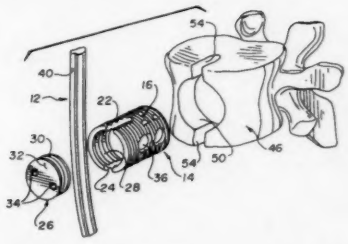
Stephen D. Kuslich, Stillwater, Minn., assignor to Spineology, Inc., Stillwater, Minn.

Original No. 5,591,235, dated Jan. 7, 1997, Appl. No. 08/404,236, filed on Mar. 15, 1995. Application for reissue Jan. 7, 1999, Appl. No. 227,163.

Int. Cl. A61F *2/44*

U.S. Cl. 623—17.11 **14 Claims**

1. A surgically implantable system for correction of a spiral abnormality which comprises:



(a) a rod adapted to extend within vertebrae of a spinal section in need of correction;

(b) at least two substantially hollow cylindrical members *each having an interior and an exterior surface and* each having a series of bone-engaging threads on the exterior surface of the cylindrical members, each of said cylindrical members including an upper **[**an**]** *and* a lower rim, *said upper rim having a diameter equal to or greater than a diameter of said lower rim,* each of said upper rims including a pair *of* opposing rod fixation slots to receive said rod transversely across said rim and to be below the plane of said rim, said rod being received in each rod fixation slot of each cylindrical member; and

(c) a locking cap secured to each of said cylindrical members at said upper rims to thereby lock said rod to each said cylindrical member.

PLANT PATENTS

GRANTED DECEMBER 18, 2001

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

US PP12,280 P2

+1 BIDENS FERULIFOLIUM PLANT NAMED 'BIDTIS-1'

Anna M. W. P. Houbraken, Enkhuizen, Netherlands, assignor to Syngenta Seeds B.V., Enkhuiken, Netherlands

Filed Feb. 9, 2000, Appl. No. 500,688

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—263 **1 Claim**

1. A new and distinct variety of Bidens plant, substantially as herein illustrated and described, characterized particularly as to novelty by its compact, upright plant habit with short internodes and bright golden yellow flowers.

US PP12,281 P2

GUINEA IMPATIENS PLANT NAMED 'OVATION DEEP ORANGE'

Lyndon W. Drewlow, Lompoc, Calif., assignor to Oglevee, Ltd., Connellsville, Pa.

Filed Apr. 17, 2000, Appl. No. 550,514

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—318 **1 Claim**

1. A new and distinct variety of Impatiens plant named Ovation Deep Orange, as illustrated and described.

US PP12,282 P2

SYNGONIUM PLANT NAMED 'GLO-GO'

Marian W. Osiecki, Marianna, Fla., assignor to Oglesby Plants Intl., Inc., Altha, Fla.

Filed Apr. 28, 2000, Appl. No. 561,017

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—374 **1 Claim**

1. A new and distinct cultivar of Syngonium plant named 'Glo-Go', as illustrated and described.

US PP12,283 P2

STRAWBERRY PLANT CALLED 'RUBY'

Peggy Pai-Chi Chang, 5983 Green Blvd., Naples, Fla. 34116

Filed Feb. 4, 2000, Appl. No. 497,677

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—208 **1 Claim**

1. A new and distinct cultivar of strawberry plant named 'Ruby', as herein described and illustrated.

US PP12,284 P2

DAHLIA PLANT NAMED 'GALLERY MONET'

Aad Verwer, Lisse, Netherlands, assignor to Gebr. Verwer, Lisse, Netherlands

Filed May 25, 1999, Appl. No. 318,498

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—321 **1 Claim**

1. A new and distinct cultivar of Dahlia plant named 'Gallery Monet', as illustrated and described.

US PP12,285 P2

PORTULACA PLANT NAMED 'SUMMER JOY ROSE'

Hiromi Matsukizono, Kagoshima, Japan, assignor to Sakata Seed Corporation, Yokohama, Japan

Filed Jul. 13, 1999, Appl. No. 353,039

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—263 **1 Claim**

1. A new and distinct cultivar of Portulaca, as shown and described herein.

US PP12,286 P2

DAHLIA PLANT NAMED 'GALLERY COBRA'

Aad Verwer, Lisse, Netherlands, assignor to Gebr. Verwer, Lisse, Netherlands

Filed Jun. 22, 1999, Appl. No. 338,010

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—321 **1 Claim**

1. A new and distinct cultivar of Dahlia plant named 'Gallery Cobra', as illustrated and described.

US PP12,287 P2

CHRYSANTHEMUM PLANT NAMED 'REGAL YOLOMPOC'

Cornelis P. Vandenberg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Mar. 15, 2000, Appl. No. 525,659

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—286 **1 Claim**

1. A new and distinct culitvar of Chrysanthemum plant named 'Regal Yolompoc', as illustrated and described.

US PP12,288 P2

VERBENA PLANT NAMED 'VERTIS'

Henricus G. W. Stemkens, Hoorn, Netherlands, assignor to Syngenta Seeds B.V., Enkhuisen, Netherlands

Filed Jul. 13, 2000, Appl. No. 615,371

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—308 **1 Claim**

1. A new and distinct variety of Verbena plant, substantially as herein illustrated and described, characterized particularly as to novelty by white flowers, which appear earlier on the plant, and has a growing habit that is first semi-erect but later spreading and hanging.

US PP12,289 P2

NEW GUINEA IMPATIENS PLANT NAMED 'OVATION SALMON'

Jagan N. Sharma, San L. Obispo County, Calif., assignor to Oglevee, Ltd., Connellsville, Pa.

Filed Apr. 17, 2000, Appl. No. 550,519

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—318 **1 Claim**

1. A new and distinct variety of Impatiens plant named Ovation Salmon, as illustrated and described.

US PP12,290 P2

PETUNIA PLANT NAMED 'BALRUFVEIN'

Kerry Strope, Pismo Beach, Calif., assignor to Ball Floraplant, A Divison of Ball Horticultural Co., West Chicago, Ill.

Filed Dec. 31, 1999, Appl. No. 475,952

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—356 **1 Claim**

1. A new and distinct cultivar of Petunia plant named 'Balrufvein', as illustrated and described.

US PP12,291 P2

NEW GUINEA IMPATIENS PLANT NAMED 'OVATION PURPLE'

Lyndon W. Drewlow, Santa Barbara County, Calif., assignor to Oglevee, Ltd., Connellsville, Pa.

Filed Apr. 17, 2000, Appl. No. 550,509

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—318 **1 Claim**

1. A new and distinct variety of Impatiens plant named Ovation Purple, as illustrated and described.

US PP12,292 P2

VERBENA PLANT NAMED 'WYNENA'

Henricus G. W. Stemkens, Hoorn, Netherlands, assignor to Syngenta Seeds B.V., Enkhuisen, Netherlands

Filed Jul. 13, 2000, Appl. No. 615,400

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—308 **1 Claim**

1. A new and distinct variety of Verbena plant, substantially as herein illustrated and described, characterized particularly as to novelty by larger burgundy flowers than other Verbena plants, which appear earlier on the plant, and a growing habit that is spreading and hanging.

US PP12,293 P2

BEGONIA PLANT NAMED 'BACCHUS'

Lubbertus H. Koppe, Ermelo, Netherlands, assignor to Koppe Veredeling B.V., Ermelo, Netherlands

Filed May 27, 1999, Appl. No. 320,926

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—349 **1 Claim**

1. A new and distinct cultivar of Begonia plant named 'Bacchus', as illustrated and described.

US PP12,294 P2

LILAC PLANT NAMED 'BAILBELLE'

Neal S. Holland, Harwood, N. Dak., assignor to Bailey Nurseries, Inc., St. Paul, Minn.

Filed Dec. 8, 1999, Appl. No. 456,394

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—248 **1 Claim**

1. A new and distinct *Syringa meyeri*×*Syringa microphylla* plant having the following combination of characteristics:

(a) Exhibits a compact growth habit,

(b) Forms attractive trusses of wine-colored buds that mature during late spring into pink blossoms having a spicy fragrance,

(c) Exhibits good winter hardiness, and

(d) Is well-suited for growing as a distinctive ornamental shrub in the landscape;

substantially as illustrated and described.

US PP12,295 P2

GERANIUM PLANT NAMED 'FISCORAL'

Angelika Utecht, Montabaur, Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Jun. 1, 1999, Appl. No. 323,151

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—332 **1 Claim**

1. A new and distinct cultivar of geranium plant named 'Fiscoral', as described and illustrated.

US PP12,296 P2

SWAMP CYPRESS 'CASCADE FALLS'

Graeme Charles Platt, Auckland, New Zealand, assignor to David and Noeline Sampson, New Plymouth, New Zealand

Filed Sep. 29, 1999, Appl. No. 408,719

Int. Cl. A01H *7/00*

U.S. Cl. Plt.—213 **1 Claim**

1. A new and distinct variety of Swamp Cypress tree substantially as herein shown and described, characterized particularly as to novelty by its weeping branch habit of growth.

US PP12,297 P2

SANVITALIA NAMED 'SANTIS 999-3'

Anna M. W. P. Houbraken, Enkhuizen, Netherlands, assignor to Syngenta Seeds B.V., Enkhuizen, Netherlands

Filed Nov. 23, 1999, Appl. No. 448,071

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—263 **1 Claim**

1. A new and distinct variety of Sanvitalia plant, substantially as herein illustrated and described, characterized particularly as to novelty by its dark green leaves, stems with anthocyanin, and bright yellow flowers with green center and year-round flowering period, depending on the temperature.

US PP12,298 P2

POINSETTIA PLANT NAMED 'FISSON GOLD'

Jens Helmut Piscator, Moncarapacho, Portugal, assignor to Florfis AG, Binningen, Switzerland

Filed Jun. 9, 2000, Appl. No. 590,691

Int. Cl. A01H *5/00*

U.S. Cl. Plt.—306 **1 Claim**

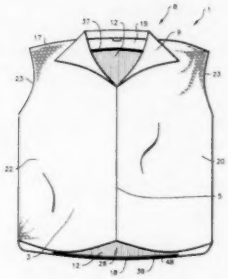
1. A new and distinct Poinsettia plant named 'Fisson Gold', substantially as illustrated and described.

PATENTS

GRANTED DECEMBER 18, 2001

GENERAL AND MECHANICAL

US 6,330,720 B1
CONVERTIBLE GARMENT
Clifton V. Steelman, P.O. Box 1457, Prosser, Wash. 99350-0800
Filed Jul. 24, 2000, Appl. No. 624,094
Int. Cl. A41D *15/04*
U.S. Cl. 2—93 **20 Claims**

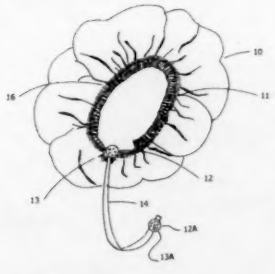


1. A convertible garment comprising:

(A) a jacket **1**; a blanket **12** affixed to the jacket **1** forming a pocket **35**; the blanket affixed to the jacket such that portions of the blanket are foldably received into the pocket;

(B) the blanket **12** having a blanket top and bottom **13**, **14**, a blanket right and left edge **15**, **16** and a centerline **42** extending generally centrally from blanket top to blanket bottom **13**, **14**; the blanket **12** affixed to the jacket **1** intermediate to the blanket right edge **15** and the centerline and intermediate to the blanket left edge **16** and the centerline and proximal to the blanket bottom **14** forming a pocket **35** having a pocket bottom **39** and a pocket opening **37**; the pocket opening **37** distal to the pocket bottom **39** and to the blanket bottom **14**; the pocket **35** foldably receives those portions of the blanket **12** positioned between the affixing means and the blanket fight and left edges **14**, **15** and between the pocket bottom **14** and the blanket top **13**; wherein the blanket and the jacket are mutually exclusive in use.

US 6,330,721 B1
SHOWER CAP WITH ELASTIC STRAP SUSPENSION DEVICE
Deborah Wallace, 67 Underwood Pl., Washington, D.C. 20012, and Matilda Y. Parker, 628 Kennebec Ave., Takoma Park, Md. 20912
Provisional application No. 60/124,815, filed on Mar. 17, 1999. This application Mar. 17, 2000, Appl. No. 528,429.
Int. Cl. A42B *1/18*
U.S. Cl. 2—174 **7 Claims**



1. A shower cap comprising:

a crown dimensioned and configured to contain the head and hair of the user;

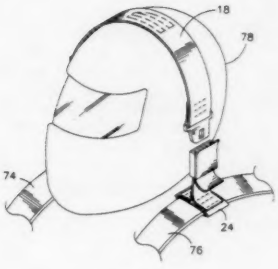
said crown having a lower edge;

said lower edge defining an opening wherein said opening is of sufficient size to receive the head and hair of the user;

a band attached to and extending from said lower edge wherein said band has a first end and a second end; and

said first end and said second end having mating attachment means so that said second end loops back towards said first end thereby forming a loop.

US 6,330,722 B1
PROTECTIVE HELMET RESTRAINT AND HEAD AND NECK STABILIZING SYSTEM
Richard M. Betts, Canoga Park, Calif., assignor to MCY III Trust, Los Angeles, Calif.
Filed Jan. 9, 2001, Appl. No. 756,943
Int. Cl. A42B *3/00*
U.S. Cl. 2—416 **78 Claims**



1. A helmet restraint and head and neck stabilizing system for use with a helmet worn by an operator or occupant of a land vehicle, boat, airplane or other motion apparatus, in conjunction with a shoulder belt system or a suit worn by the operator or occupant, the helmet restraint and head and neck stabilizing system comprising:

a. a flexible belt assembly;

b. means for attaching said belt assembly to said shoulder belt system or said suit worn by said operator or occupant;

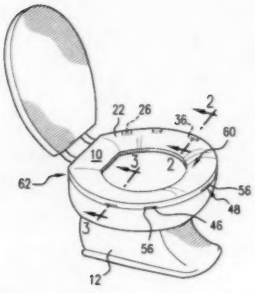
c. means for attaching said belt assembly to said helmet;

d. said belt system having at least two belts connectable by a releasable connecting means.

US 6,330,723 B1
AIR FRESHENING TOILET SEAT
Peter D. Orgias, 22 E. 58 St., Brooklyn, N.Y. 11203
Filed Oct. 6, 1999, Appl. No. 413,346
Int. Cl. A47K *13/24*
U.S. Cl. 4—237 **13 Claims**

1. An air freshening toilet seat for reception atop a toilet bowl, comprising:

a toilet seat body defining a seating structure for accommodating a weight of a user, said toilet seat body having a generally annular shape which presents an inner periphery and an outer periphery, said toilet seat body including an enclosed compressible chamber disposed therewithin, said toilet seat body being constructed such that a volume of said compressible chamber is compressed when the weight of the user is applied thereto; and



receptacle structure defining at least one reception chamber disposed in said seating structure, said reception chamber having an open input end disposed on a laterally accessible portion of said outer periphery of said toilet seat body and at least one opening in communication with said compressible chamber, said reception chamber being configured for receiving and removably accommodating an air freshening element containing an air freshening agent inserted through said input end and for at least partially restricting movement of the air freshening element held within said reception chamber, such than when the freshening element is received in said receiving chamber, a sufficient amount of air freshening agent is directed into the atmosphere about the user in response to a forced passage of air through said reception chamber generated by a compression of said compressible chamber resulting from the weight of the user being applied to said toilet seat body, the air freshening cartridge being slidably receivable in said reception chamber through said input end, said input end including a retaining lip for contactingly engaging a lower portion of an end of the cartridge to inhibit unintentional dislodgment thereof from the reception chamber when held therein.

US 6,330,724 B1

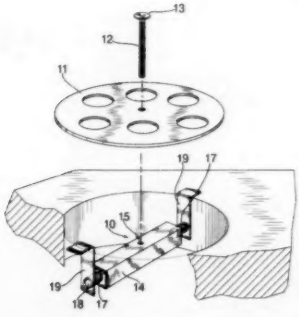
DRAIN COVER LOCKING DEVICE

Robert K. Belle, 495 Lakeside Blvd., Franklin Lakes, N.J. 07417

Filed Dec. 13, 1999, Appl. No. 458,720

Int. Cl. E04D *13/04*

U.S. Cl. 4—288 **6 Claims**



1. A drain cover locking device in combination with a screen or strainer comprising:

(a) a center bar;

(b) an opening extending vertically through said center bar;

(c) means for holding said center bar inside a drain or discharge pipe;

(d) means for attaching said screen or strainer to said center bar at said opening extending vertically through said center bars wherein said attaching means is a fastening device having a tamper-resistant screw head wherein said fastening device extends through said screen or strainer and into said opening extending vertically through said center bar and wherein said means for holding said center bar inside a drain or discharge pipe is a pair of "L" shaped hangers wherein a long leg of each "L" is attached to one end each of said center bar.

US 6,330,725 B1

VACUUM TOILET SYSTEM FOR A VEHICLE

Kent Karlsson, Poecking, and Karl Kechele, Augsburg, both of Germany, assignors to AOA Apparatebau Gauting GmbH, Gauting, Germany

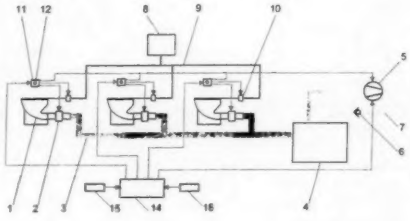
PCT No. PCT/EP99/05270, § 371 Date Jan. 23, 2001, § 102(e) Date Jan. 23, 2001, PCT Pub. No. WO00/07878, PCT Pub. Date Feb. 17, 2000

PCT Filed Jul. 23, 1999, Appl. No. 744,347

Claims priority, application Germany, Jul. 31, 1998, 198 34 537

Int. Cl. E03D *11/00*

U.S. Cl. 4—431 **10 Claims**



1. A vacuum toilet system for a vehicle, especially a passenger aircraft, the toilet system comprising:

a plurality of toilets, a collecting tank, a conduit system connecting the plurality of toilets to the collecting tank via a flush valve per each individual toilet, a vacuum generator is fluidly connected to the collecting tank, a flush water tank connecting to the plurality of toilets via a flush water system having a flush water valve or a flush water pump per the individual toilet;

the vacuum toilet system comprises a flush water control which acts on the flush valve and the flush water valve or the flush water pump of the individual toilet, the flush water control includes an actuating device and a standard flush program stored therein for flushing the individual toilet;

the toilet system further comprises a central empty-flush control which acts on the vacuum generator, the flush valve and the flush water valve or the flush water pump of all toilets, wherein the central empty-flush control includes an empty-flush program per the individual toilet, the empty-flush program having at least one empty-flush cycle for allowing flush water of the toilets to flow through the conduit system and into the collection tank when the empty-flush control is actuated.

US 6,330,726 B1

GANGWAY SYSTEM

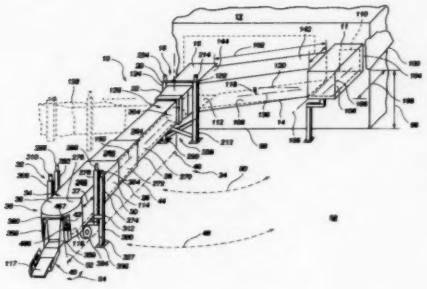
George Dean Hone, Roy; Glen Orval West, West Haven, and Eric Peter Beazer, Ogden, all of Utah, assignors to FMC Corporation, Chicago, Ill.

Filed Feb. 18, 2000, Appl. No. 506,964

Int. Cl. E01D *19/04; 1/00*

U.S. Cl. 14—71.5 **31 Claims**

1. A bridge for movement of passengers between a location at a passenger terminal having multiple levels therein and a passenger



transfer location on a vehicle, said passenger transfer location varying in height between a first level and a second level, said bridge comprising:

a vestibule for attachment to an elevated level of a passenger terminal having multiple levels including a ground level and the elevated level spaced above the ground level, said vestibule having a vestibule transport surface extending away from the passenger terminal and being positionable for transfer of passengers between said vestibule transport surface and the elevated level;

a first bridge unit having a first end and a second end, said first bridge unit being movably attached to said vestibule proximate said first end thereof to be positionable to a selected one of a plurality of first bridge unit positions, said first bridge unit having a first transport surface extending substantially between said first end and said second end thereof, said first end of said first transport surface being positioned proximate said vestibule transport surface for transfer of passengers between said first transport surface and said vestibule transport surface;

a rotunda assembly having said second end of said first bridge unit rotatably attached thereto, said rotunda assembly having a rotunda transport surface positioned for transfer of passengers between said first transport surface and said rotunda transport surface;

elevation structure attached to said rotunda assembly for moving said rotunda assembly to one of a plurality of rotunda positions relative to and above said ground level;

a second bridge unit having a first end and a second end, said first end thereof being rotatably attached to said rotunda assembly for movement of said second bridge unit to a selected one of a plurality of second bridge unit positions, said second bridge unit having a second transport surface extending substantially between said first end and said second end thereof, said second transport surface being positioned for transfer of passengers between said rotunda transport surface and said second transport surface;

a driving mechanism attached to and positioned proximate said second end of said second bridge unit for moving said second end of said second bridge unit to a selected one of said plurality of second bridge unit positions between a lower position and an elevated position above said ground level and for moving said second bridge unit radially about said rotunda assembly; and

brow structure for transferring passengers between said second bridge unit and said vehicle, said brow structure having a first end, a second end and a brow transport surface extending substantially therebetween, said first end of said brow structure being connected proximate said second end of said second bridge unit for transfer of passengers between the second transport surface and the brow transport surface, and said second end of said brow structure being configured to contact said vehicle proximate said passenger transfer location for transfer of passengers between said brow transport surface and said vehicle;

said elevation structure attached to said rotunda assembly and said driving mechanism being operable for moving said rotunda assembly, said first bridge unit and said second bridge unit relative to each other to position said first end of said brow structure between a first level and a second level spaced above said first level.

US 6,330,727 B1

Patent Not Issued For This Number

US 6,330,728 B2

BRUSH SCRUBBING APPARATUS

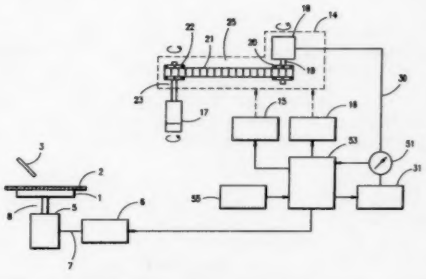
Koji Ueki, and Takashi Osako, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of application No. 09/263,687, filed on Mar. 5, 1999, now Pat. No. 6,219,872. This application Jan. 12, 2001, Appl. No. 758,214.

Claims priority, application Japan, Mar. 9, 1998, 10-057166

Int. Cl. B08B *1/04;* **A46B** *13/02*

U.S. Cl. 15—77 **4 Claims**



1. A brush scrubbing apparatus, comprising:

a rotating turntable which retains a wafer;

a brush which removes a particle on the wafer;

driving means for driving the brush through the use of a driving current; and

a controller which detects a reference position of said brush responding to a change of a first current value for driving the brush, the change being caused by the brush contacting the wafer, said controller further storing a predetermined distance to thrust said brush downward from the reference position, said controller also storing a second current value for driving the brush when the brush is moved downward toward the wafer until the predetermined distance to thrust said brush downward from the reference position is reached, said controller finding a differential value between the first and second current values and comparing the differential value and a predetermined threshold value;

wherein the reference position is a position in which the brush contacts the wafer.

US 6,330,729 B1

BRUSH ALIGNMENT PLATFORM

Shon Brunelli; Timothy Kennedy, both of Boise, and Bryan Ludwig, Meridian, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of application No. 09/055,720, filed on Apr. 6, 1998. This application Jan. 11, 2000, Appl. No. 481,128.

This patent is subject to a terminal disclaimer.

Int. Cl. A47L *1/02;11/02;* **B67C** *11/02;* **G03D** *5/06*

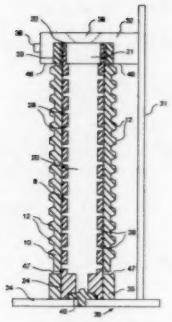
U.S. Cl. 15—102 **20 Claims**

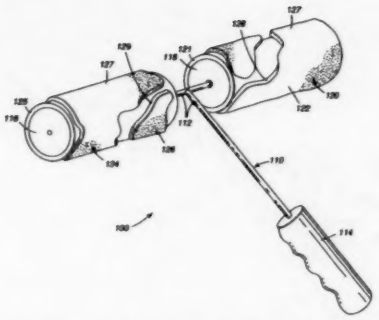
1. A brush alignment apparatus comprising:

a cylindrical roller member having first and second ends and an outer surface defining an internal cavity with a plurality of orifices extending from the outer surface to the internal cavity;

a hollow cylindrical brush mounted on said cylindrical roller member and radially displaceable with respect to said cylindrical roller member;

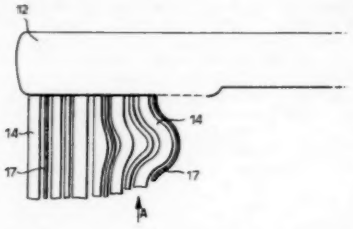
a first receptacle for the first end of the roller member and having a channel therethrough in fluid communication with the internal cavity of the roller member;





a first support arm supporting the first receptacle;
a second receptacle for the second end of the roller member;
a second support aim supporting the second receptacle of the roller member; and
a source of pressurized fluid in fluid communication with the channel in the first receptacle and with the internal cavity of the roller member for radially displacing and aligning said hollow cylindrical brush with respect to said cylindrical roller member.

US 6,330,730 B1
TOOTHBRUSH
Richard Huw Davies; Derek Guy Savill, both of Bebington, and Paul Jones, Childwall, all of United Kingdom, assignors to Chesebrough-Pond's USA Co., division of Conopco, Inc., Greenwich, Conn.
Filed Jul. 29, 1998, Appl. No. 124,266
Claims priority, application United Kingdom, Aug. 1, 1997, 9716397
Int. Cl. A46B *9/04*
U.S. Cl. 15—167.1 **10 Claims**

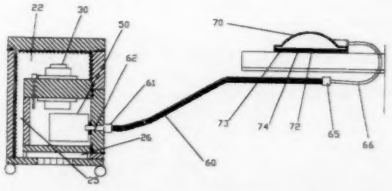


1. A toothbrush incorporating an indicator comprising a pressure indicating material which is piezochromic and provides an optical signal without the provision of a power supply.

US 6,330,731 B1
FAUX FINISH APPLICATOR
Susan A. Jackson, Plymouth, and Martin L. Eull, Maple Grove, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Oct. 2, 1998, Appl. No. 165,965
Int. Cl. B05C *17/02*
U.S. Cl. 15—230.11 **30 Claims**

1. An apparatus for creating a faux finish on a surface, the apparatus comprising:
a) a dual roller handle; and
b) a pair of roller covers each mounted for independent rotation thereon and each including a core and a raised foam pattern mounted to the core, the core including a pair of core ends and a circumferential area between the pair of ends, the foam pattern having an outer foam surface, a perimeter and distinct edges at least at the perimeter of the foam pattern, with the foam pattern sized, shaped and positioned about the core to create adjacent edges and a gap between the adjacent edges when the foam pattern is received on the core, the foam pattern covering a substantial portion of the circumferential area of the core so as to provide each roller cover with a substantial area of the outer foam surface, the core being free of foam at least at the gap and around substantially all of the circumferential area of each core end, the foam pattern of one roller cover adapted to absorb a paint having at least one different visually perceptible characteristic than a paint absorbed by the foam pattern of the other roller cover so as to apply the paint from the outer surfaces of the foam patterns onto a surface when the apparatus is moved in an overlapping motion over the surface, blending the paints on at least a portion of the surface by movement of the outer foam surfaces of the foam patterns of the pair of roller covers over the surface, the edges of each foam pattern configured to discharge the respective paints as distinct but muted edge discharge marks that appear as at least fragmentary portions of an outline of the raised foam pattern, with the edge discharge marks of one foam pattern distinguishable from the edge discharge marks of the other foam pattern due to the different visually perceptible characteristic of the paint and with the edge discharge marks combining with blended paint portions to produce the faux finish on the surface with at least some edge discharge marks overlaid upon the blended paint portions.

US 6,330,732 B1
DUST COLLECT DEVICE FOR AN ERASER
Te-Hsi Liu, No. 33, Dong-Hsin Road, Chu-Pei, Hsin-chu, Taiwan
Filed Jul. 19, 2000, Appl. No. 619,387
Int. Cl. A47L *5/38*
U.S. Cl. 15—314 **6 Claims**



1. An improved dust collecting device for an eraser, comprising:
an outer box having a first space therein, and having an air outlet that communicates an outside of said box with the first space;
an inner box that is smaller than the first space and being fixed within the first space of said outer box so as to define from the first space an outer space located within said outer box and outside of said inner box, said inner box having an inner

space, and having a hole that communicates the outer space with the inner space, said inside box further having a passage that leads into the inner space;

an inhaler component disposed in the hole, and having an air suction ring and an air exhaust ring respectively disposed in the inner space and the outer space;

a door leaf that is pivotally connected to said outer box, and being pivotal to a closed position where the door leaf covers the passage into the inner space and contacts said inner box to form an airtight seal, said door leaf being pivotal to an open position where the passage is not covered by said door leaf, said door leaf having a hole therethrough;

a ventilated dust bag adapted to prevent the passage of dust therethrough, said dust bag being disposed in the inner space of said inner box, said dust bag having a perforation, and a bonding component disposed around the perforation;

a connection assembly extending through the hole in said door leaf and having one end projecting into said dust bag via the perforation, and having another end, said dust bag being connected to said connection assembly using said bonding component; and

a dust guide pipe work, one end of which is joined to the another end of said connection assembly, another end of said dust guide pipe work being connectable with an eraser;

wherein when said inhaler component is activated, air is drawn from the inner space into said outer space, causing air to be sequentially drawn through said dust guide pipe work, said connection assembly and said ventilated dust bag, so that dust can be collected in said dust bag.

US 6,330,733 B1

ARTICULATION, ESPECIALLY FOR CONNECTING SIDEPIECES OF LADDERS

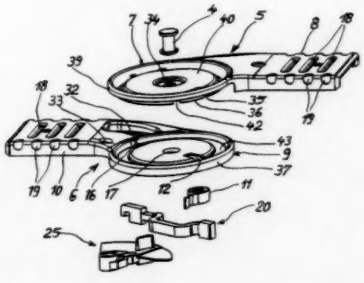
Jörg Rauschenberger, Asperg, Germany, assignor to Rauschenberger GmbH u. Co., Germany

Filed Jan. 14, 2000, Appl. No. 483,514

Claims priority, application Germany, Jan. 14, 1999, 199 01 125

Int. Cl. E05D *11/10*

U.S. Cl. 16—326 **11 Claims**



1. An articulation comprising:

two joint legs that are pivotable relative to one another about a joint shaft, wherein each of said joint legs comprises a pair of shaped parts, wherein one of said joint legs forms an outer joint portion having outer shells and at least one joint connector, and the other joint leg forms an inner joint portion having inner disks and at least one joint connector, said inner disks having at least one first recessed portion;

a locking slide having at least one spring-loaded locking member, said at least one locking member movable essentially radially or tangentially relative to the joint shaft, and engageable in at least one second recessed portion of said one joint leg, wherein said at least one locking member extends transverse to a plane of said inner disks through said at least one first recessed portion of said-inner disks; and

a lever that is pivotable about a journal that is spaced from said joint shaft, wherein said locking slide cooperates with said lever.

US 6,330,734 B1

HINGE ASSEMBLY FOR AUTOMOBILE HOODS

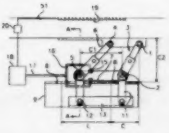
Sun-Hyung Cho, Ulsan, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

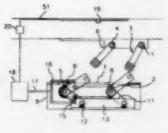
Filed Dec. 23, 1999, Appl. No. 472,360

Claims priority, application Rep. of Korea, Sep. 13, 1999, 99-39002

Int. Cl. E05D *11/06;11/00*

U.S. Cl. 16—376 **12 Claims**





1. A hinge assembly for an automobile having a hood and a fender apron comprising:

a first hinge rod unit having upper and lower ends, the first hinge rod unit for being rotatably engaged at the upper end with a bottom of the hood with a first hinge pin and for being rotatably engaged at the lower end with the fender apron with a second hinge pin; and

a second hinge rod unit having upper and lower ends, the second hinge rod unit for being rotatably engaged at the upper end with the bottom of the hood with a third hinge pin and for being rotatably engaged at the lower end with the fender apron with a fourth hinge pin;

wherein the third hinge pin is spaced apart from the first hinge pin by a first interval and the fourth hinge pin is spaced apart from the second hinge pin by a second interval longer than the first interval; and

wherein each of the first and second hinge rod units comprises:

a first hollow hinge rod;

a second hollow hinge rod; and

a breakable lock holding the second hinge rod to the first hinge rod, the lock being breakable when subjected to a force greater than a predetermined force.

US 6,330,735 B1

APPARATUS AND PROCESS FOR FORMING A LAID FIBROUS WEB WITH ENHANCED BASIS WEIGHT CAPABILITY

John Timothy Hahn, Merrill; Michael Barth Venturino, Appleton; Bradley John Berken, Greenville; Raymond Gerard St. Louis, Fremont, and Paul Joseph Datta, Appleton, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Feb. 16, 2001, Appl. No. 785,959

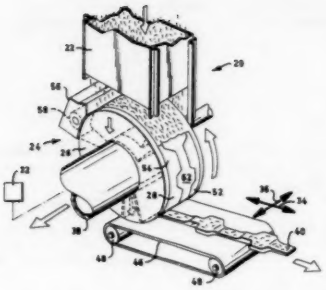
Int. Cl. D01G *25/00*

U.S. Cl. 19—296 **21 Claims**

1. An apparatus for forming an airlaid fibrous web on a moving surface, said apparatus having a longitudinal direction, a lateral cross-direction and a depth-wise z-direction, and said apparatus comprising:

a contoured foraminous member having a first side portion, a laterally opposed second side portion, and a depth contour formed into a thickness of said foraminous member, said depth contour having a lower-basis-weight section, and a higher-basis-weight section which is contiguous with said low-basis-weight section;

a longitudinally extending, first side-masking member which is located superjacent said first side portion of the foraminous



member, has a first inboard side wall surface, and is at least laterally movable relative to said foraminous member;

at least a second, separately provided, longitudinally extending, side-masking member which is located superjacent said second side portion of the foraminous member, has a second inboard side wall surface, and is at least laterally movable relative to said foraminous member; and

a first releasable attachment system for selectively holding at least said first side-masking member at a substantially fixed position relative to said foraminous member during a moving of said foraminous member along said longitudinal direction, wherein

said first side-masking member has a bottom surface profile along said longitudinal direction;

said bottom surface profile provides a depth-wise contour with varying, non-constant dimensions along a z-directional thickness direction; and

said bottom surface profile of said first side-masking member substantially matches a correspondingly adjacent surface profile of said foraminous member in said low-basis-weight and high-basis-weight sections of the foraminous member.

US 6,330,736 B1

BUCKLE JOINT

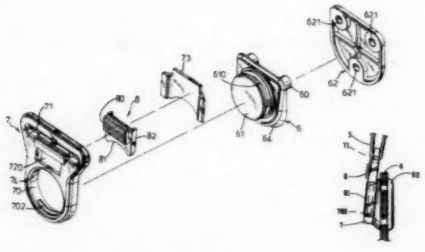
Koon-Ming Cheng, Taipei, Taiwan, assignor to Ruey Yuan Co., Ltd., Taipei, Taiwan

Filed Apr. 12, 2000, Appl. No. 547,862

Claims priority, application Taiwan, Apr. 14, 1999, 88205729 U

Int. Cl. A44B *11/25*

U.S. Cl. 24—656 **8 Claims**



1. A buckle joint, comprising:

a clasp member having a seat, and a stud projecting outwardly from said seat, said stud having an outer periphery with an annular groove formed therein;

a catch member having top and bottom ends, a first through-hole formed therein adjacent to said bottom end and defined by a ring-shaped inner face, a circumferential first tongue portion projecting upwardly into said first through-hole from one side of said ring-shaped inner face adjacent to said bottom end, and a recess formed therein between said top end and said first through-hole, said stud projecting into said first through-hole, said first tongue portion engaging releasably said annular groove;

a latch member mounted slidably in said recess of said catch member and having a second tongue portion projecting downwardly into said first through-hole of said catch member from another side of said ring-shaped inner face opposite to and aligned with said first tongue portion for engaging releasably said annular groove, said latch member being slidable into and out of said first through-hole from said recess of said catch member between a locking position, in which said second tongue portion engages said annular groove, and an unlocking position, in which said second tongue portion disengages said annular groove; and

an urging member mounted in said recess of said catch member for urging said latch member to move to said locking position.

US 6,330,737 B1

TOOL FOR MOUNTING DISK VALVES IN MOTOR CYLINDER HEADS

Bengt Lowemark, Ljusdal, Sweden, assignor to Trego Maskin AB, Ljusdal, Sweden

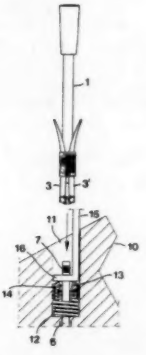
PCT No. PCT/SE98/01595, § 371 Date Mar. 27, 2000, § 102(e) Date Mar. 27, 2000, PCT Pub. No. WO99/16586, PCT Pub. Date Apr. 8, 1999

PCT Filed Sep. 9, 1998, Appl. No. 509,355

Claims priority, application Sweden, Sep. 26, 1997, 9703509

Int. Cl. B23P *19/04*

U.S. Cl. 29—214 **7 Claims**



1. A tool for mounting disk valves in motor cylinder heads, the disk valves being of the type that on its rod (**6**) has a number of transversal, circumferential grooves (**7**) for accommodating a corresponding number of beads (**8**) on the insides of two substantially semi-circularly shaped locking bodies (**9**, **9'**), which taper conically from the rear ends towards the front ends (**24**, **25**) and which have the purpose of securing a locking ring (**13**) against the spring (**12**) of a valve, comprising:

a shaft (**1**), which in the region of one end has a spring-loaded tap (**4**) that is pressable into an outer cavity in the end portion of the shaft, and, proximate said spring-loaded end, two cross-sectionally vaulted clamping arms (**3**, **3'**) that are placed on opposed sides of the shaft,

which clamping arms are articulatedly connected with the shaft and activated by at least one spring means (**5**) that holds the clamping arms (**3**, **3'**) swivelled inwards against the shaft (**1**), and against the action of which the clamping arms are pivotable outwards to a position distal from the shaft (**1**) and the tap (**4**),

the clamping arms (**3**, **3'**) having free end portions incorporating holding means for keeping said locking bodies (**9**, **9'**) in a given axial position relative to the clamping arms, in order to allow a transfer of the locking bodies to the valve rod (**6**), by

positioning the tap (**4**) against the valve rod and pressing the tap into the cavity of the shaft (**1**), wherein

said holding means comprise at least one protrusion (**20**) which protrudes relative to a cross-sectionally concave and axially straight inside on the free end portion of the individual clamping arm (**3**, **3'**) in order to serve as a carrier for the individual locking body, and which has a support surface (**21**) that is placeable against the rear end (**24**) of the locking body and extend to said inside in order to hold the convexly vaulted outside (**23**) of the locking body placed against the concave inside of the clamping arm when the locking body is moved from the tap up to said groove (**7**) on the valve rod (**6**), thereby distancing the inner edge on a front narrow end portion (**25**) of the locking body from external envelope surfaces of the tap (**4**) and the valve rod (**6**).

US 6,330,738 B1

DISMOUNTING METHOD FOR FASTENING MEMBER, DISMOUNTING DEVICE FOR FASTENING MEMBER, ATTACHMENT CONSTRUCTION OF FASTENING MEMBER AND PRODUCTION SYSTEM USING THE DISMOUNTING METHOD FOR FASTENING MEMBER

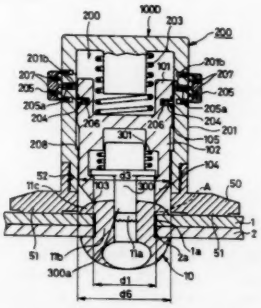
Ryosuke Yoshikawa; Yuichi Jibiki, and Mitsuru Yasuda, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 30, 1999, Appl. No. 385,890

Claims priority, application Japan, Aug. 28, 1998, 10-259410; Aug. 31, 1998, 10-260942; Sep. 30, 1998, 10-277073; Oct. 5, 1998, 10-282249; Oct. 20, 1998, 10-298733; Aug. 17, 1999, 11-230250

Int. Cl. B23P *19/02*

U.S. Cl. 29—426.4 **100 Claims**



1. A dismounting method for a fastening member in which a fastening member is dismounted from a base material, the fastening member including a head and a body, the body being inserted into a fastening hole formed in the base material, the head contacting a peripheral edge of the fastening hole to assume a fastened state with the base material, said dismounting method comprising the steps of:

a first cutting step of cutting a boundary region between the head and the body from the head toward the body, wherein the head has an axial hole at a center thereof, the axial hole extending in a direction toward the body, such that in said first cutting step, the axial hole acts as a cutting reference positioning portion to cut the boundary region; and

a separating step of separating the head from the body, wherein the fastening member is removed from the base material.

12. A dismounting device for dismounting a fastening member from a base material, said fastening member including a head and a body, said body being inserted into a fastening hole formed in said base material, said head contacting a peripheral edge of said fastening hole to assume a fastened state with said base material, said dismounting device comprising:

a cutting means for cutting a boundary region between said body and said head to separate said head from said body, wherein said cutting means includes a cylindrical portion and an inclined portion continuously formed in said cylindrical portion, said inclined portion having an extreme end with a diameter smaller than a diameter of said fastening hole and sized to cut said boundary region, and wherein said cutting means cuts said fastening member so that said inclined portion is superposed on a separating part where said body and said head are separated from each other in said boundary region.

US 6,330,739 B1

CAULKING METHOD

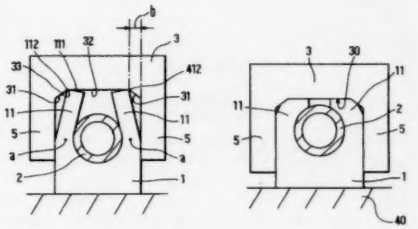
Makoto Ito, Kariya, Japan, assignor to Denso Corporation, Kariya, Japan

Filed Apr. 19, 1999, Appl. No. 293,933

Claims priority, application Japan, Apr. 20, 1998, 10-109428

Int. Cl. B23P *11/00*

U.S. Cl. 29—513 **9 Claims**



1. A method of caulking first and second members, comprising:

preparing the first and second members, the first member having a pair of claws opposed to one another and an engagement recess provided between the pair of claws, the second member having an engagement portion capable of being inserted into the engagement recess of the first member;

disposing the engagement portion of the second member in the engagement recess of the first member;

externally holding outer faces of the pair of claws by a first jig;

bringing a second jig into contact with outer side edges of the pair of claws, the second jig having a generally trapezoid recess with a pair of first processing walls that contact the outer side edges of the pair of claws, a second processing wall interposed between the pair of first processing walls, and inflected joint-portions provided between each of the pair of first processing walls and the second processing wall;

bending the pair of claws inward by moving the outer side edges of the pair of claws along the pair of first processing walls toward the second processing wall until the outer side edges of the pair of claws engage the inflected joint-portions; and

upsetting the pair of claws by the second processing wall in a state that the outer side edges of the pair of claws are engaged with the inflected joint-portions.

US 6,330,740 B1

PROCESS FOR MAKING AND FINISHING A STAMPED PART HAVING COLORED, TEXTURED SURFACE

Alan C. Krempels, Mundelein, Ill., assignor to GAM Investments, L.L.C., Schiller Park, Ill.

Filed Dec. 17, 1999, Appl. No. 466,263

Int. Cl. B23P *17/00*

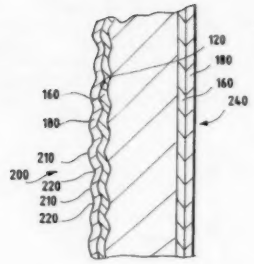
U.S. Cl. 29—527.4 **7 Claims**

1. A process for making and finishing a part, the process comprising steps of

(a) providing a steel sheet having a textured surface,

(b) stamping the part from the steel sheet so that the part has an exterior surface comprised of at least some of the textured surface,

(c) coating the stamped part with a zinc layer, and

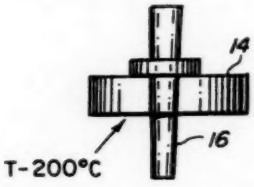


(d) coating the zinc layer with a colored, chromate conversion layer, wherein said steps are performed so that the exterior surface of the part, as coated in the coating steps, has a finish simulating the colored, textured finish that the exterior surface would have if the part were to be stamped from a steel sheet so that the part would have a smooth, exterior surface and if the smooth, exterior surface were to be electrostatically coated with a similarly colored, epoxy powder, which would be heat-cured.

US 6,330,741 B1
METHOD OF SHRINK FITTING CRYSTALLINE SAPPHIRE

Dexter V. Wright, Pittsburgh, and Robert Weinert, Monroeville, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 5, 1999, Appl. No. 413,943
Int. Cl. H01Q *13/00*
U.S. Cl. 29—600 **2 Claims**



1. A technique for shrink fitting a post mount sapphire resonator onto a single piece of c-axis sapphire comprising:

a tapered post mount sapphire held at room temperature;

a single piece c-axis sapphire puck at room temperature having a tapered hole of similar dimension of taper as that of the tapered post mount sapphire; predetermined diameter;

a split block clamp placed around the tapered post mount to determine the amount said post is inserted into said puck; and

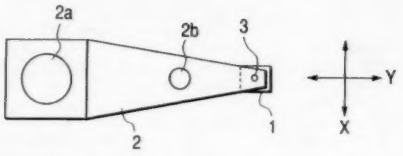
said post at room temperature being inserted into the hole in said heated puck to the depth allowed by the clamp whereupon the post and puck temperatures are allowed to equalize.

US 6,330,742 B1
MAGNETIC HEAD POSITIONING METHOD

Toshiaki Ozawa; Shoichi Moriyama, and Hiroshi Aimura, all of Niigata-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jul. 29, 1998, Appl. No. 126,026
Claims priority, application Japan, Jul. 31, 1997, 9-206105
Int. Cl. G11B *5/42*
U.S. Cl. 29—603.06 **9 Claims**

1. A magnetic head positioning method for positioning a head body opposed to a recording medium and a support member for supporting said head body relative to each other, wherein light is directed to a combined portion of said head body and said support member and a boundary line between areas different in light reflectance is detected using a camera with a multitude of photodetectors arranged therein, the method comprising the steps of:



subjecting an image obtained by said camera to image processing on the basis of light intensities detected by said photodetectors, when assuming that blocks where luminances corresponding respectively to the photodetectors appear on the image are unit blocks, comparing the luminances of plural unto blocks arranged in a predetemined direction, and specifying an actual position of the boundary line located in one unit block;

detecting the center of a concave pivot formed in said support member and serving as a pivoting fulcrum of said head body, said center being detected by predicting a circular boundary line of a perimeter of the concave pivot, said circular boundary line being predicted by connecting the actual position of the boundary line in a plurality of unit blocks along the perimeter of the concave pivot to form a circular arc, and said center of the concave pivot being predicted on the basis of the circular arc;

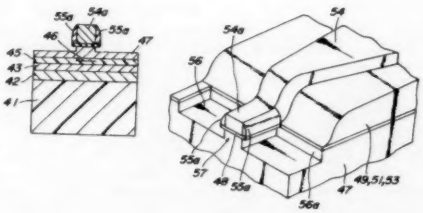
adjusting the position of the head body and that of the support member relative to each other so that the distance between an edge portion of the head body and the center of the pivot detected in the preceding step falls under a tolerance; and

fixing the head body and the support member to each other, after said adjustment.

US 6,330,743 B1
THIN FILM MAGNETIC HEAD AND METHOD OF MANUFACTURING THE SAME

Atsushi Iijima, Saku, and Yoshitaka Sasaki, Yokohama, both of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Nov. 25, 1998, Appl. No. 199,412
Claims priority, application Japan, Nov. 26, 1997, 9-324534
Int. Cl. G11B *5/127*
U.S. Cl. 29—603.14 **10 Claims**



1. A method of manufacturing a thin film magnetic head, comprising the steps of:

forming a first magnetic layer having a pole portion such that the first magnetic layer is supported by a substrate;

forming a thin film coil above said first magnetic layer such that the thin film coil is supported by an insulating layer in an electrically isolated manner;

forming a gap layer made of a non-magnetic material at least on said pole portion of the first magnetic layer and said insulating layer;

forming a second magnetic layer on said gap layer, said second magnetic layer having a pole portion which is opposed to said pole portion of the first magnetic layer via said gap layer;

forming side walls made of a non-magnetic material at least on side surfaces of said pole portion of said second magnetic layer;

performing a reactive ion etching to remove a portion of said gap layer adjacent to side edges of said pole portion of the second magnetic layer by using said pole portion of the second magnetic layer, said side walls and a photoresist layer provided on said gap layer as a mask to form a recess in said gap layer;

performing an ion beam etching to remove a portion of said first magnetic layer by using said pole portion of the second magnetic layer and said side walls as a mask such that said recess is dug down partially into the first magnetic layer; and

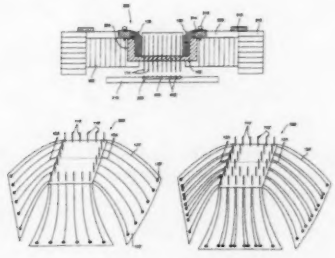
polishing the substrate, pole portions of the first and second magnetic layers and gap layer sandwiched by these magnetic layers to form an air bearing surface which is to be opposed to a magnetic record medium, while an inner side wall of said recess is used as a positional reference.

US 6,330,744 B1

CUSTOMIZED ELECTRICAL TEST PROBE HEAD USING UNIFORM PROBE ASSEMBLIES

Robert C. Doherty, Foothill Ranch, and Thomas K. Stewart, Fountain Valley, both of Calif., assignors to PJC Technologies, Inc., Lake Forest, Ill.

Filed Jul. 12, 1999, Appl. No. 351,423
Int. Cl. H01R *43/00*
U.S. Cl. 29—825 **24 Claims**



1. A method of manufacturing a test head, comprising:

selecting an electrical circuit having a plurality of terminals arranged in a terminal pattern;

providing a plurality of pitch series sets, each of said plurality of pitch series sets comprising a plurality of electrically conductive rigid pins, each of said plurality of rigid pins including a pin shaft and an exposed pin contact tip, said plurality of pin contact tips configured in a rectilinear pattern having a uniform pitch ratio, each of said plurality of pitch series sets further including a compliant registration medium carrying said plurality of rigid pins;

arranging said plurality of pitch series sets with respect to each other, wherein said pluralities of pin contact tips are configured in a pin pattern corresponding to said terminal pattern; and

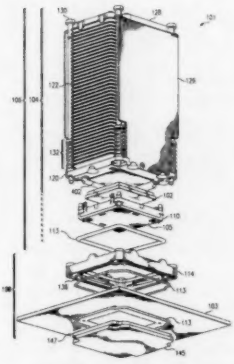
affixing said plurality of pitch series with respect to each other.

US 6,330,745 B1

METHOD FOR MAKING A MODULAR INTEGRATED APPARATUS FOR HEAT DISSIPATION

S. Daniel Cromwell, Penryn, Calif., and Laszlo Nobi, Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of application No. 09/195,256, filed on Nov. 18, 1998, now Pat. No. 6,061,235. This application Jan. 7, 2000, Appl. No. 479,357.
Int. Cl. H05K *3/30*
U.S. Cl. 29—832 **7 Claims**



1. A method for assembling a modular integrated apparatus comprising:

including a circuit board having electric power;

assembling a field replaceable apparatus by:

assembling a modular processor apparatus by:

including a processor;

including a landgrid array interposer socket that enables electrical connection between said circuit board and said processor;

attaching a socket frame to said landgrid array interposer socket; and

fitting said processor into said socket frame;

attaching a support base to said socket frame thereby positioning said modular processor apparatus for connection of said processor to said circuit board; and

connecting a heat sink to said support base so that said modular processor apparatus thermally couples to said heat sink with a sufficiently low resistance thermal path to manage heat for said processor; and

attaching said circuit board to said field replaceable apparatus thereby assembling said modular integrated apparatus so that said processor electrically connects to said circuit board.

US 6,330,746 B1

METHOD OF DETERMINING THE LENGTH OF ELECTRIC WIRES FOR USE IN CONSTRUCTING A WIRE HARNESS, AND METHOD OF CONSTRUCTING A WIRE HARNESS

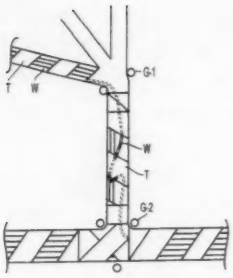
Kenichi Uchiyama; Kiyokazu Kurihara, and Hidetaka Yuri, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

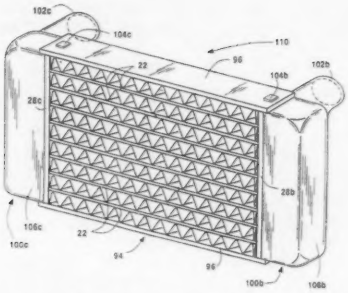
Filed Jun. 21, 1999, Appl. No. 337,486
Claims priority, application Japan, Jun. 22, 1998, 10-174557
Int. Cl. H01R *43/00*
U.S. Cl. 29—872 **7 Claims**

1. A method of determining appropriate lengths of a plurality of wires to be used to construct a wire harness by a manufacturing process, comprising:

(1) cutting electric wires of said appropriate lengths,

(2) temporarily binding groups of said electric wires together,





(3) passing the groups through at least one jig on a wire harness assembly

(4) s he groups to each other by winding adhesive tape around the groups,

(5) inserting ends of a plurality of the wires into respective cavities in connector housings,

(6) using an approximate length for each wire, each said approximate length being based on a respective path through the wire harness that passes through each said jig; and

(7) determining each of the appropriate lengths by correcting each said approximate length to take into account the following correction factors:

(a) bending of each of the wires as the wires passes through said at least one jig, correction factor (a) takes into account the difference between (i) a bent length of a wire path, at the center of the wire harness in section, that bends to pass through the center of the distance between fingers of the jig and (ii) a curved length of a wire path, at the center of the wire harness in section, that curves to pass between the center of the distance between the fingers of the jig and an inner peripheral surface of a finger at the side in which the wire is curved,

and when one of the wires is intended to be inserted into a cavity in one of the connector housings,

(b) the extent to which the wire is intended to extend into the said one of the connector housings, and

(c) a distance of the cavity into which the wire is intended to be inserted from a position of said one of the connector housings that is central with respect to the wire harness.

d) thereafter inserting said grommet into said header portion molded opening; and

e) inserting said tube into said header portion molded opening and through said grommet body portion to seal said tube to said header portion opening.

US 6,330,747 B1

HEAT EXCHANGER ASSEMBLY UTILIZING GROMMETS AND INTEGRAL CAST TANKS

Marco Lambert, Vernon, and Michael J. Kolb, Southington, both of Conn., assignors to Transpro, Inc., New Haven, Conn.

Continuation of application No. 09/257,610, filed on Feb. 25, 1999, which is a division of application No. 08/920,304, filed on Aug. 28, 1997, now Pat. No. 5,894,649. This application Oct. 19, 2000, Appl. No. 692,752.

This patent is subject to a terminal disclaimer.

Int. Cl. B23P *15/26*

U.S. Cl. 29—898.052 **12 Claims**

1. A method of making a heat exchanger comprising the steps of:

a) providing a combined molded header and tank having a header portion integral with a tank portion, the molded header and tank combination having at least one opening originally molded in the header portion of the combination and at least one opening originally molded in the tank portion of the combination for passage of fluid into or out of the header and tank combination;

b) providing a tube from a heat exchanger core for insertion within the header portion molded opening;

c) providing a resilient grommet having a body portion for extending within the header portion molded opening;

US 6,330,748 B1

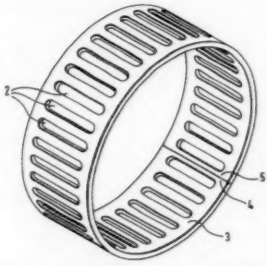
METHOD OF MAKING FORMED BODIES

Leo Müntnich, and Karl-Ludwig Grell, both of Aurachtal, Germany, assignors to Ina Wälzlager Schaeffler OHG, Herzogenaurach, Germany

Continuation of application No. PCT/EP97/00323, filed on Jan. 24, 1997. This application Nov. 2, 1998, Appl. No. 184,124.

Int. Cl. B21D *53/12*

U.S. Cl. 29—898.067 **6 Claims**



1. A method of making a cage for use in a radial roller bearing, axial roller bearing or linear roller bearing, said method comprising in succession the steps of:

treating a metal strip by a process selected from the group consisting of heat treatment or thermochemical treatment for providing the metal strip with desired properties with respect to hardness, strength and wear resistance;

punching a plurality of spaced slots into the metal strip for formation of pockets for receiving rolling elements; and

rolling the metal strip into a round shape and fusing adjacent ends of the metal strip to form a cage.

US 6,330,749 B1

ADJUSTABLE SAFETY UTILITY KNIFE WITH EASILY REMOVABLE BLADE HOLDER

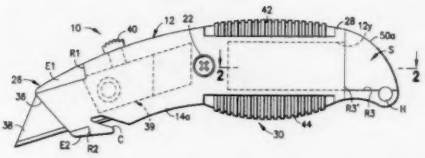
Zareh Khachatoorian, Northridge, Calif., and Jian Ping Qiu, Hangzhou, China, assignors to Olympia Group, Inc., City of Industry, Calif.

Filed Aug. 14, 1999, Appl. No. 374,524

Int. Cl. B26B *1/08;1/10*

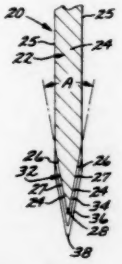
U.S. Cl. 30—162 **13 Claims**

1. An adjustable safety utility knife comprising an elongated ergonomically shaped handle formed of two elongate shell mem-



bers each having a peripheral edge; fastening means for fastening said shell members at said peripheral edges along a vertical parting plane to form an elongated internal cavity, said handle defining a front end, a back end and an intermediate portion suitable for being gripped by a user and also defining top and bottom surfaces extending along opposite sides of said shell members along said peripheral edges, said handle having a slot-like aperture at said front end substantially aligned with said parting plane and dimensioned for passage of a flat cutting blade therethrough; guide means within said elongated cavity for guiding the cutting blade between a first position for safely storing the blade fully inside said cavity and a second position for selectively extending the blade beyond said aperture to expose at least a portion thereof; a manually operated button arranged on said top surface and coupled to said guide means for selectively moving the blade between said first and second positions, said handle having a rear opening at same back end for providing access to said elongated internal cavity; a carrier frame having a blade cartridge receiving compartment and dimensioned to be slideably removably receivable within said cavity through said rear opening for movements along the longitudinal direction of said handle between a retracted position in which said carrier frame is fully stored within said internal cavity of said handle end and an extended position in which said carrier frame is at least partially moved exteriorly of said back end to provide access of said cartridge receiving compartment; and a blade cartridge for storing a plurality of flat cutting blades receivable within said blade cartridge receiving compartment, dimensioned for passage, from said blade cartridge, of a flat cutting blade therethrough.

US 6,330,750 B1
SCAPEL BLADE HAVING HIGH SHARPNESS AND TOUGHNESS
Nathan K. Meckel, LaMesa, Calif., assignor to Molecular Metallurgy, Inc., El Cajon, Calif.
Continuation-in-part of application No. 08/909,910, filed on Aug. 12, 1997, now Pat. No. 6,076,264, which is a continuation-in-part of application No. 08/585,177, filed on Jan. 11, 1996, now Pat. No. 5,724,868. This application Mar. 15, 2000, Appl. No. 526,406.
Int. Cl. B26B *9/00*
U.S. Cl. 30—350 **20 Claims**



1. A coated scalpel blade, comprising:

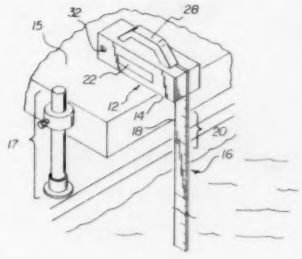
a substrate having a body and a tapered region with a cutting edge thereon, the substrate being made of steel hardened to a Rockwell C hardness of at least 54 and then annealed to a Rockwell C hardness of from about 46 to less than about 53; and

a coating overlying the tapered region, the coating having a thickness of from about 0.1 to about 2.5 micrometers and comprising

a first coating layer of a first metal, and

a second coating layer overlying the first coating layer, the second coating layer comprising a chemical combination of a second metal selected from the group consisting of vanadium, chromium, zirconium, titanium, niobium, molybdenum, hafnium, tantalum, and tungsten, and combinations thereof, and a nonmetal selected from the group consisting of nitrogen and carbon, and combinations thereof, the coated scalpel blade having a coated edge thereon.

US 6,330,751 B1
DOCK LEVELER APPARATUS
Larry D. Seaman, HCR 2 Box 251, Pequot Lakes, Minn. 56472
Provisional application No. 60/067,736, filed on Dec. 2, 1997. This application Oct. 27, 1998, Appl. No. 179,101.
Int. Cl. B43L *7/12*
U.S. Cl. 33—465 **8 Claims**



1. A dock leveler apparatus, comprising:

a base member, wherein said base member includes a top wall, a pair of opposed ends and a planar base bottom surface,

a ruler member connected to said base member, said ruler member having a first end and a second, remotely opposed end, said ruler member first end being connected to said base member planar base bottom surface proximal to one of said opposed ends of said base member, wherein said ruler member includes a first planar ruler edge and a second planar ruler edge extending parallel to said planar ruler first edge and spaced a predetermined distance from said planar ruler first edge, wherein said ruler member includes a plurality of measurement indicia along its length between said planar ruler first edge and said planar ruler second edge, and

a handle attached to said top wall of said base member,

wherein said apparatus further includes a pivot assembly interconnected between said ruler member and said base member, said pivot assembly comprising a pivot pin support member and a pivot pin, said pivot pin support member extending downwardly from said base member planar bottom surface proximal to one of said opposed ends of said base member, said pivot pin extending through said ruler member and said pivot pin support member to define a pivot axis located below said bottom surface of said base member, said ruler member being adapted to be rotatable about said pivot axis from a first operative position wherein said ruler first edge and said ruler second edge are oriented perpendicular to said base member planar bottom surface with said ruler member second edge being in alignment with said one of said opposed ends of said base member, and to a second inoperative position wherein said ruler member first edge and said ruler member second edge are oriented parallel to said base member planar bottom surface, said predetermined distance between said ruler member first end and said ruler member second end being greater than the longitudinal distance between said pair of opposed ends of said base member such that said ruler member second

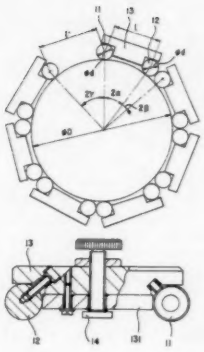
end extends beyond the other opposed end of said base member when said ruler member is in said second inoperative position,

wherein said pivot pin support member includes a first pivot pin reception aperture,

a second pivot pin reception aperture being provided in said ruler member first end, and

a pivot pin member received in said first pivot pin reception aperture and said second pivot pin reception aperture when said first pivot pin reception aperture and said second pivot pin reception aperture are placed in registration, and

wherein at said base member and said handle member are of material less dense than water such that said apparatus is floatable in water when said ruler member is either in said operative position or said inoperative position.



US 6,330,752 B1

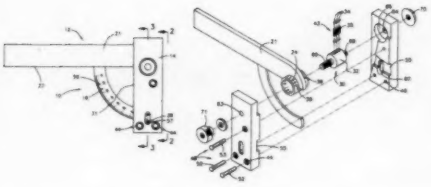
ADJUSTABLE SQUARING TOOL

Albert F. Ellam, 13 Vermont House, 2 East Road, Walthamstow, London E17 5NY, United Kingdom

Filed Feb. 4, 2000, Appl. No. 497,904

Int. Cl. B43L *13/00*

U.S. Cl. 33—471 **14 Claims**



1. An adjustable squaring tool, comprising:

a pivot arm assembly having an elongated pivot arm and a cylinder coupled to an end of the pivot arm, the cylinder having a plurality of radially spaced apertures;

a main member, the pivot arm being pivotally coupled between a first section and a second section of the main member;

a graduated arcuate measurement arm extending from the pivot arm, the measurement arm extending through a channel in the main member;

a drum assembly having a drum passing through the cylinder of the pivot arm, the drum assembly having at least one spring biased bearing extending outwardly from said drum, said bearing being positioned for engaging a selectable one of said apertures in the cylinder corresponding to a selectable angle between said pivot arm and said main member; and

a locking assembly for clamping the pivot arm between the first and second sections of the main member to prevent movement of the pivot arm relative to the main member.

US 6,330,753 B1

GAUGE FOR MEASURING LARGE DIAMETER

Bin Li, Nanjing, China, assignor to Southeast University, Nanjing, China

PCT No. PCT/CN97/00083, § 371 Date Mar. 30, 1999, § 102(e) Date Mar. 30, 1999, PCT Pub. No. WO98/14750, PCT Pub. Date Apr. 9, 1998

PCT Filed Aug. 20, 1997, Appl. No. 269,192

Claims priority, application China, Oct. 3, 1996, 96117113

Int. Cl. G01B *5/00;5/20*

U.S. Cl. 33—555.1 **13 Claims**

1. A versatile large diameter measuring device characterized in that it comprises a series of independent measuring gauges and several positioning accessories; each measuring gauge comprising two positioning elements, a fastener and a body, wherein said two positioning elements placed at two ends of said body are a ball and a roller, said fastener arranged in said body is a permanent magnet or a magnetic-force-conversion device with a built-in permanent magnet and said positioning accessories are connected to the body.

US 6,330,754 B1

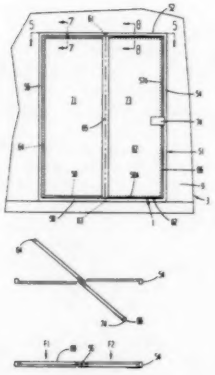
DOOR FOR EAR CORN DRYER

Ken McAllister, Horicon, Wis., assignor to KC Manufacturing Inc., Columbus, Wis.

Filed Mar. 14, 2000, Appl. No. 524,902

Int. Cl. F26B *19/00;* **F27D** *1/18*

U.S. Cl. 34—202 **26 Claims**



1. An ear corn dryer comprising:

a. an enclosure defined by side walls, a back wall, a front wall, a floor, and a roof;

b. means for holding corn in the enclosure;

c. means for producing air pressure within and air flow through the enclosure to dry the corn; and

d. a door in a selected enclosure wall comprising:

i. a casing in the selected wall;

ii. an access door having opposed edges and a midpoint therebetween; and

iii. means for swinging the access door between opened and closed positions in the casing about an axis of rotation located between the access door opposed edges, the axis of

rotation dividing the access door into first and second panels such that the first panel is inside the enclosure and the second panel is outside the enclosure when the access door is in the open position,

so that air pressure inside the enclosure produces forces on the access door first and second panels and thereby creates opposite torques about the axis of rotation.

US 6,330,755 B1

VACUUM PROCESSING AND OPERATING METHOD

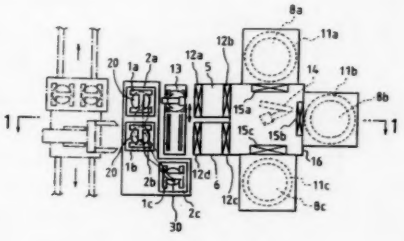
Shigekazu Kato, Kudamatsu; Kouji Nishihata, Tokuyama; Tsunehiko Tsubone, Hikari, and Atsushi Itou, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application No. 09/177,495, filed on Oct. 23, 1998, now Pat. No. 6,012,235, which is a continuation of application No. 09/061,062, filed on Apr. 16, 1998, now Pat. No. 5,950,330, which is a continuation of application No. 08/882,731, filed on Jun. 26, 1997, now Pat. No. 5,784,799, which is a division of application No. 08/593,870, filed on Jan. 30, 1996, now Pat. No. 5,661,913, which is a continuation of application No. 08/443,039, filed on May 17, 1995, now Pat. No. 5,553,396, which is a division of application No. 08/302,443, filed on Sep. 9, 1994, now Pat. No. 5,457,896, which is a continuation of application No. 08/096,256, filed on Jul. 26, 1993, now Pat. No. 5,349,762, which is a continuation of application No. 07/751,951, filed on Aug. 29, 1991, now Pat. No. 5,314,509. This application Dec. 16, 1999, Appl. No. 461,432.

Claims priority, application Japan, Aug. 29, 1990, 2-225321

Int. Cl. F26B *5/04*

U.S. Cl. 34—406 **32 Claims**



2. A method of transferring at least one wafer in a vacuum processing apparatus, comprising the steps of:

(i) placing a cassette containing at least one wafer to be processed, at a cassette table, the cassette table having an upper region thereover which is open to a cassette transferring path;

(ii) loading said at least one wafer sequentially in order from said cassette, by means of a first conveyor, to a load lock chamber, in which one wafer is to be disposed and therefrom, by means of a second conveyor, to a transfer chamber under vacuum; and

(iii) after processing the wafers, unloading processed wafers from a plurality of vacuum processing chambers into said cassette at said cassette table, from which the wafers had been loaded, by means of the second conveyor in said transfer chamber under vacuum, an unload lock chamber, in which one wafer is to be disposed, and said first conveyor.

US 6,330,756 B1

VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR

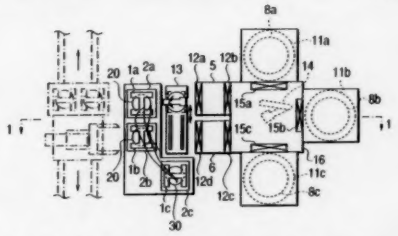
Shigekazu Kato, Kudamatsu; Kouji Nishihata, Tokuyama; Tsunehiko Tsubone, Hikari, and Atsushi Itou, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of application No. 09/552,572, filed on Apr. 19, 2000, which is a division of application No. 09/461,432, filed on Dec. 16, 1999, now abandoned, which is a continuation of application No. 09/177,495, filed on Oct. 23, 1998, now Pat. No. 6,012,235, which is a continuation of application No. 09/061,062, filed on Apr. 16, 1998, now Pat. No. 5,950,330, which is a continuation of application No. 08/882,731, filed on Jun. 26, 1997, now Pat. No. 5,784,799, which is a division of application No. 08/593,870, filed on Jan. 30, 1996, now Pat. No. 5,661,913, which is a continuation of application No. 08/443,039, filed on May 17, 1995, now Pat. No. 5,553,396, which is a division of application No. 08/302,443, filed on Sep. 9, 1994, now Pat. No. 5,457,896, which is a continuation of application No. 08/096,256, filed on Jul. 26, 1993, now Pat. No. 5,349,762, which is a continuation of application No. 07/751,951, filed on Aug. 29, 1991, now Pat. No. 5,314,509. This application Jul. 12, 2000, Appl. No. 614,764.

Claims priority, application Japan, Aug. 29, 1990, 2-225321

Int. Cl. F26B *5/04*

U.S. Cl. 34—406 **9 Claims**



1. A method of transferring a substrate, using an apparatus comprising:

a cassette for receiving plural substrates, said cassette being located at a position of which an upper region is open to a cassette transferring path air;

an atmospheric transferring device for transferring, one by one, said substrates;

a vacuum transferring chamber having a vacuum transferring means;

plural vacuum processing chambers for processing, one by one, said substrates;

a device having a first lock chamber in which said substrates are carried in and carried out, one by one, between said atmospheric transferring device and said vacuum transferring chamber and a second lock chamber in which said substrates are carried in and carried out, one by one, between said atmospheric transferring device and said vacuum transferring chamber; and

opening and closing devices for opening and closing one of the first and second lock chambers each time a substrate is carried into said one of the first and second lock chambers, one by one, and each time a substrate is carried out of said one of the first and second lock chambers, one by one,

wherein the method comprises the steps of:

taking out, one by one, said substrates from said cassette at said position, by said atmospheric transferring device;

carrying in a substrate taken out from the cassette, to one of said first and second lock chambers in air;

closing off said one of said first and second lock chambers, from said atmospheric transferring device, by using the opening and closing devices;

evacuating said one of said first and second lock chambers;

transferring said substrate to any one of said plural vacuum processing chambers from said one of said first and second lock chambers in a vacuum, through said vacuum transferring chamber;

processing said substrate in said one of said plural vacuum processing chambers;

transferring said substrate, which has beensubjected to processing, to one of said first and second lock chambers in the vacuum through said vacuum transferring chamber;

closing said one of said first and second lock chambers, to which the substrate is transferred after the processing, from said vacuum transferring chamber, by using the opening and closing devices, and, after that, opening the one of the first and second lock chambers, having the substrate therein, to air, by using the opening and closing devices; and

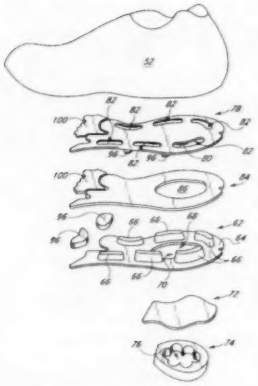
taking out said substrate in said one of said first and second lock chambers, to which the substrate is transferred after the processing, by said atmospheric transferring device and receiving said substrate in said cassette.

US 6,330,757 B1

FOOTWEAR WITH ENERGY STORING SOLE CONSTRUCTION

Brian A. Russell, Littleton, Colo., assignor to Britek Footwear Development, LLC, Boulder, Colo.

Filed Aug. 18, 1998, Appl. No. 135,974
Int. Cl. A43B *13/18*
U.S. Cl. 36—28 **49 Claims**



1. A sole adapted for use with an article of footwear to be worn on a foot of a person while traversing along a support surface and operative to store and release energy resulting from compressive forces between the person and the support surface, comprising:

(a) a first layer of stretchable resilient material having a first surface on a first side thereof and a second surface on a second side thereof opposite the first surface;

(b) a first profile formed of a stiff material and positioned on the first side of said resilient layer, said first profile having a first profile chamber formed therein with the first profile chamber having a first interior region opening toward the first surface of said resilient layer, said first profile and said resilient layer positioned relative to one another such that said resilient layer spans across the first interior region; and

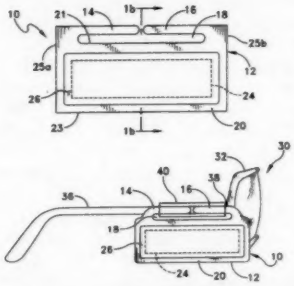
(c) a second profile formed of a stiff material and positioned on the second side of said resilient layer, said second profile including a single primary actuator element positioned to substantially individually underlie a majority of the heel of the person's foot and sized for mated insertion into the first profile chamber, the primary actuator element facing the second surface of said resilient layer to define a static state, said first and second profiles positioned relative to one another with said primary actuator element being oriented relative to the first profile chamber such that the compressive force between the foot and the support surface moves said first and second profiles toward one another and moves said primary actuator element into the first profile chamber thereby stretching said resilient layer into the first interior region to define an active state wherein energy is stored by said resilient layer, said resilient layer operative to release the energy to move said first and second profiles apart from one another upon removal of the compressive force to return said first and second profiles to the static state.

US 6,330,758 B1

ELECTRONIC ARTICLE SURVEILLANCE TAG FOR EYEGLASSES AND A METHOD FOR ATTACHING THE ELECTRONIC ARTICLE SURVEILLANCE TAG TO A PAIR OF EYEGLASSES

Jeffrey A. Feibelman, East Greenwich, R.I., assignor to Display Technologies, Inc., Johnston, R.I.

Filed Aug. 9, 1999, Appl. No. 371,068
Int. Cl. G09F *3/10*
U.S. Cl. 40—299.01 **23 Claims**



1. A tag and an apparatus for securing the tag to a pair of eyeglasses having a temple piece attached to a lens frame, the tag and apparatus comprising:

a tag body having at least one prong extending longitudinally across said tag body so as to define an aperture between said tag body and said at least one prong; and

a tube constructed from a material which shrinks when subjected to heat;

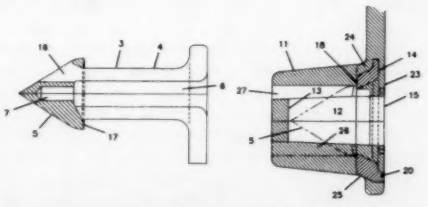
wherein said tag body is securable to the pair of eyeglasses by inserting the at least one prong and the temple piece within said heat shrinkable tube, such that upon subjecting said tube to heat, the tube shrinks to secure said at least one prong to the temple piece of the eyeglasses.

US 6,330,759 B1

LIVESTOCK TAG LOCKING SYSTEM

Egil Wikan, Os i Østerdalen, Norway, assignor to Os Husdyrmerkefabrikk A/S, Osterdalen, Norway

Filed Oct. 20, 1998, Appl. No. 175,670
Claims priority, application Norway, Oct. 31, 1997, 975015
Int. Cl. G09F *3/00*
U.S. Cl. 40—301 **16 Claims**



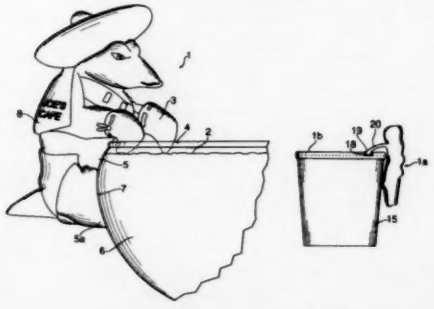
1. A tamper proof livestock ear tag device, comprising:

a male component and a female component, said male component comprising a panel portion with a surface to carry indicia, to identify livestock, and a stem having a tip, said panel portion and said stem being made integrally of a same material, said tip being made of a first plastic material and said stem being made of a second plastic material, said tip being harder than said stem;

wherein the male component comprises a predefined weakest point, in which the male component will tear when a pulling force exceeding a predetermined value is exerted between said tip and said panel portion, said weakest point being at an interface between said stem and said tip, said tip having recesses formed therein, and said second material filling said recesses and forming said weakest point, said weakest point being formed integral with said stem, said weakest point having a total cross section smaller than said stem, whereby said second material filling said recesses considerably increases a contact surface between said second material and said tip; and

wherein said female component comprises an eye portion, said eye portion being equipped with a retaining ring, said eye portion being made of a third plastic material and said retaining ring being made of a fourth plastic material, said retaining ring being harder than said eye portion, said retaining ring being molded into said eye portion and being at least partially encased by the material of said eye portion, said retaining ring having a ring portion, said ring portion being radially bendable, so that said ring portion is bent towards a radially external material of said eye portion when said tip of the male component is pressed through said retaining ring, said female component further comprising a cup portion made integrally with said eye portion, said cup portion receiving at an interior portion said tip of the male component.

US 6,330,760 B1
PROMOTIONAL PRODUCT
Ralph J. Wolgast, 7 Misty Ridge Cir., Kinnelon, N.J. 07405
Filed Aug. 19, 1999, Appl. No. 377,528
Int. Cl. G09F *3/00*
U.S. Cl. 40—324 **10 Claims**



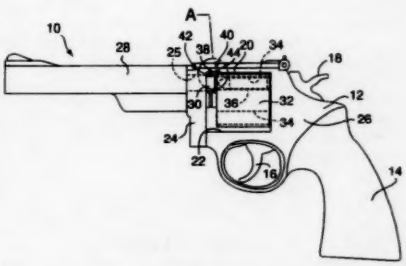
1. A promotional product capable of balancing on a selected one of a beverage drinking vessel and a food container comprising:

a figurine capable of balancing on a top of said selected one of said beverage drinking vessel and said food container, said figurine being custom-made to loosely engage said top of said selected one of said beverage drinking vessel and said food container and bearing against an external surface of a side wall of said selected one of said beverage drinking vessel and said food container, said figurine bearing against said external surface of said side wall at a location spaced from said top of said selected one of said beverage drinking vessel and said food container, said figurine being a representation of a selected one of a person, an animal, an object and a cartoon character;

wherein said figurine includes a body part spaced from said top of said selected one of said beverage drinking vessel and said food container contacting said external surface of said side wall thereof;

wherein said body part is concave to engage a complementary convex portion of said external surface of said side wall.

US 6,330,761 B1
BLAST SHIELD APPARATUS AND METHOD OF ASSEMBLY FOR A REVOLVER
Michael S. Duval; Brett Curry, both of Chicopee, and Norman Spencer, Longmeadow, all of Mass., assignors to Smith & Wesson Corp., Springfield, Mass.
Filed May 18, 2000, Appl. No. 574,467
Int. Cl. F41C *3/14*
U.S. Cl. 42—59 **26 Claims**



1. A firearm comprising:

a frame;

a barrel affixed to the frame;

a receiver having a chamber for receiving a cartridge therein, the receiver aligning the chamber with the barrel and having a forward end being spaced from a rear end of the barrel to provide a gap through which propellant gases from the cartridge passes; and

a blast shield having,

a forward portion engaged against a surface of the barrel and a surface of the frame such that the barrel secures the blast shield to the frame; and

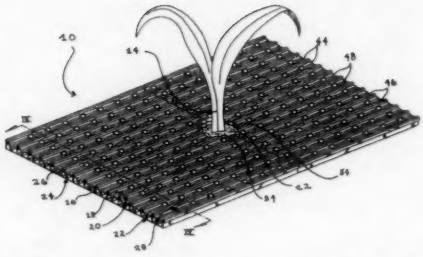
a bridging portion extending rearwardly from the forward portion to bridge the gap, the bridging portion being substantially harder than the frame for resisting erosion by the propellant gases.

US 6,330,762 B1
MULCHING STRUCTURE WITH IRRIGATION APERTURES
August Puspurs, 3395 Somerset, Saint-Laurent, Quebec, Canada, H4K 1R7
Provisional application No. 60/093,597, filed on Jul. 21, 1998.
This application Jul. 22, 1999, Appl. No. 358,448.
Int. Cl. C09K *17/52*; **A01G** *13/10*
U.S. Cl. 47—9 **11 Claims**

1. A mulching structure for allowing an irrigating fluid to reach a soil surface while providing shade to said soil surface from light rays emanating from a light source, said mulching structure comprising:

a first wall made out of a substantially impermeable material, said first wall defining a first wall outer surface, said first wall being provided with a first wall aperture extending therethrough;

a second wall made out of a substantially impermeable material, said second wall defining a second wall outer surface facing in a direction generally oriented opposite said first wall outer



surface, said second wall having a second wall aperture extending therethrough;

a wall spacing means extending between said first and second walls for maintaining said first and second walls in a wall spaced relationship relative to each other;

a fluid guiding and light ray blocking means extending between said first and second wall apertures for allowing through flow of said fluid therebetween while preventing through passage of said light rays from said first wall outer surface to said second wall outer surface;

said mulching structure further comprising a fluid biasing means formed on said first wall for biasing towards said first wall aperture a volume of said fluid having reached said first wall outer surface.

US 6,330,763 B1

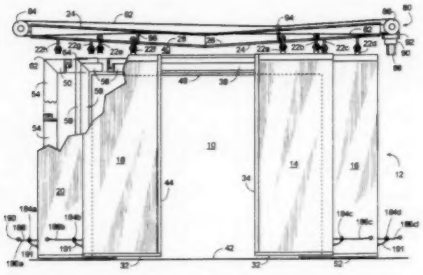
TRANSLATING DOOR WITH DISENGAGEABLE SEALS

Rodney Kern, Dubuque; Dave Leppert, Zwingle, both of Iowa; Peter Schulte, East Dubuque, Ill.; James Schwingle, Cuba City, Wis., and Dean Shanahan, Dubuque, Iowa, assignors to Rite-Hite Holding Corporation, Milwaukee, Wis.

Filed Sep. 10, 1999, Appl. No. 394,796

Int. Cl. E05D *15/06*

U.S. Cl. 49—231 **13 Claims**



1. A door for at least partially covering a doorway defined by a wall and a lower surface, comprising:

a first door panel adapted to laterally translate along a plane relative to the doorway between a doorway blocking position and an unblocking position;

a first seal including a first sealing surface interposed between a first attachment end and a first distal end with the first attachment end being attached to the first door panel; and

a second seal disposed to allow relative movement between the first seal and the second seal, the second seal including a second sealing surface interposed between a second attachment end and a second distal end, such that the first door panel in the doorway blocking position causes the first sealing surface to face the second sealing surface and positions the second distal end between the first distal end and at least one of the first door panel and the first attachment end, wherein both the first sealing surface and the second sealing surface are tilted relative to the plane.

US 6,330,764 B1

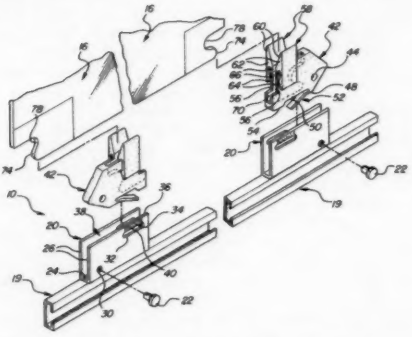
DOOR WINDOW MOUNTING AND REGULATOR ASSEMBLY AND METHOD FOR ASSEMBLY

Larry G. Klosterman, 36718 Thomas Dr., Sterling Heights, Mich. 48312

Filed Nov. 19, 1999, Appl. No. 444,229

Int. Cl. B60J *1/00*

U.S. Cl. 49—375 **22 Claims**



1. A door window glass mounting assembly adapted to mount a door window glass having a contour therein, said door window glass mounting assembly comprising:

a base member;

a pair of clevis brackets mounted on said base member, each clevis bracket of said pair of clevis brackets having a pair of walls extending in a direction away from said base member, each wall of said pair of walls having a first aperture and an elongated slot spaced from said aperture therein;

a pair of retainer brackets, each retainer bracket of said pair of retainer brackets pivotally connected within one respective clevis bracket of said pair of clevis brackets, each retainer bracket of said pair of retainer brackets further having:

a base surface;

a spring tab extending from said base surface;

a pair of sidewalls extending in a direction away from said base surface, said pair of sidewalls defining a slot therebetween, each sidewall of said pair of sidewalls having:

a cantilevered clasp extending from said sidewall;

means for latching said cantilevered clasp to said elongated slot of a respective wall of said pair of walls of each said respective one of said clevis brackets;

said slot terminating in a bottom surface portion;

an upper contour portion along said bottom surface portion;

an undercut contoured portion adjacent said upper contour portion; and

means for fastening each of said pair of retainer brackets to one respective clevis bracket of said pair of clevis brackets.

US 6,330,765 B1

FRAME FOR A SLIDING WINDOW HAVING A MOVABLE TRACK SECTION FOR REMOVING THE WINDOW

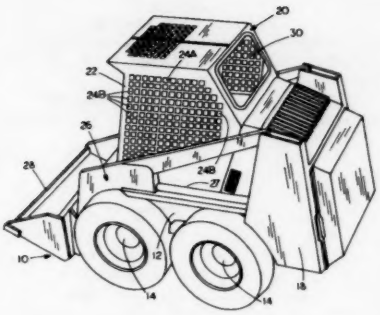
Jeffrey A. Dahl, Lisbon, N. Dak., assignor to Clark Equipment Company, Woodcliff Lake, N.J.

Filed Jul. 9, 1999, Appl. No. 350,689

Int. Cl. E06B *3/46;3/60*

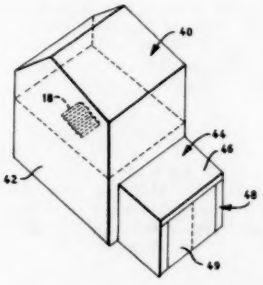
U.S. Cl. 49—453 **9 Claims**

2. A frame for a fixed window panel and a sliding window panel on a cab of a skid steer loader comprising fixed window frame sections, the fixed window frame sections being adapted to retain the fixed window panel in a plane, and including top and bottom track sections for slidably guiding the sliding window panel in a path parallel to the plane, the bottom track section including a fixed portion and a bottom frame track portion which together form a



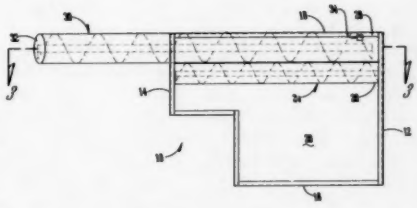
window support track wall having a length to support the sliding window panel during movement between an open position and a closed position thereof, said bottom frame track portion is movable between a first position wherein the window support track wall is adapted to provide a guide for the sliding window panel and a second position where the bottom frame track portion is lowered with respect to said first position and the sliding window panel is adapted to be removed from the track sections, and wherein the bottom frame track portion has a support flange extending downwardly therefrom, the support flange having at least two support slots which receive fasteners extending perpendicular to the support flange, said support slots guiding movement of the bottom frame track portion on the fasteners between the first and second positions of the bottom frame track portion.

US 6,330,766 B1
DWELLING STRUCTURE ADAPTED TO ENCLOSE AN OVERSIZED VEHICLE
John A. Brownlee, III, 380 Beadling Rd., Pittsburgh, Pa. 15228
Provisional application No. 60/070,252, filed on Dec. 31, 1997.
This application Dec. 31, 1998, Appl. No. 224,470.
This patent is subject to a terminal disclaimer.
Int. Cl. E04D *13/18*
U.S. Cl. 52—173.1 **6 Claims**



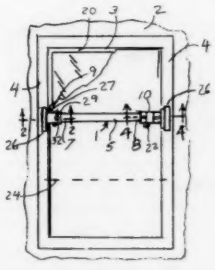
1. A dwelling system comprising:
an oversized vehicle mobily disposed and having a height greater than that of a residential garage door;
a housing having one or more doors disposed therein, the doors being actuatable to create an opening large enough to provide access to a chamber disposed within the housing such that the oversized vehicle is selectively movable into the chamber so as to fully enclose the oversized vehicle within the housing; and
a garage addition which extends outward from the housing to enclose the oversized vehicle having a length that exceeds a width of the housing, the garage addition having a roof, at least a portion of which is rotatable.

US 6,330,767 B1
UNLOADING SYSTEM FOR PARTICULATE MATERIALS BINS
Brian W. Carr, Nevada; Donald F. Handorf, Ames; Scott Sporrer, Nevada; Ryan D. Jensen, Huxley; Nick Merfeld, Nevada, and Mark D. Mathis, Roland, all of Iowa, assignors to Gary W. Clem, Inc., Nevada, Iowa
Filed Nov. 18, 1999, Appl. No. 442,785
Int. Cl. E04H *7/00*
U.S. Cl. 52—192 **7 Claims**



1. A grain storage compartment having opposite end walls, opposite side walls and a sloping bottom extending downwardly and away from a bottom edge of one side wall to a bottom edge of the other side wall and forming a horizontal arcuate channel;
a first horizontal auger in the arcuate channel having a single discharge end and being connected to a first motor, and being normally in a inoperative mode;
a second auger being inclined and having a single intake end adjacent the discharge end of the first auger and being connected to a second motor; and
a proximity sensor mounted within the grain storage compartment adjacent the discharge end of the first horizontal auger and the intake end of the second auger and being operatively connected to the first motor to operate the first horizontal auger when the sensor detects an absence of grain at the location of the sensor;
the position of the sensor being such that it is normally directly submerged in grain within the grain storage compartment when the first motor is in an inoperative mode.

US 6,330,768 B1
WINDOW STORM PANEL BRACE
Donald J. Rodrigues, 1790 Riverwood La., Coral Springs, Fla. 33071
Filed Aug. 21, 2000, Appl. No. 641,959
Int. Cl. E06B *3/26*
U.S. Cl. 52—202 **7 Claims**



1. A brace for removably pressing a rigid protective panel against a window frame within a window opening in a building, in which the opening is defined by opposed walls, the brace comprising:
a) an elongate body having a long axis and first and second ends;

b) a first end assembly affixed to the first end and terminating in a cushioned, high-friction planar pad that is angularly adjustable for lying flat against a first opposed wall of the window opening;

c) a second end assembly connected to the second end and terminating in a high-friction planar pad that is angularly adjustable for lying flat against a second opposed wall of the window opening, the second end assembly constructed to enable the respective pad to reciprocate along a short path parallel to the long axis;

d) spring bias means urging the pad of the second end assembly from the body; and

e) fixing means for stopping reciprocating motion and forcing the pad of the second end assembly away from the body to tightly press the pads against the first and second opposed walls of the window opening, the brace for being held in place in the window opening and pressing the protective panel against the window frame.

US 6,330,769 B1

SASH MOUNT SYSTEM

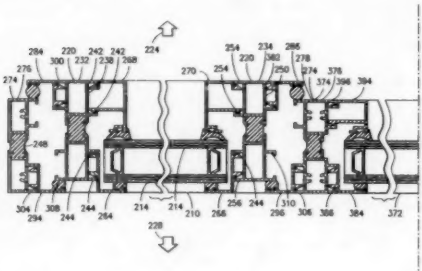
Francis Manzella, Rockville Centre, N.Y., and Harry Riegelman, Arlington, Tex., assignors to Thermo-Roll Window Corp., West Babylon, N.Y.

Continuation-in-part of application No. 09/048,438, filed on Mar. 26, 1998, now Pat. No. 6,094,874. This application Jul. 31, 2000, Appl. No. 628,601.

This patent is subject to a terminal disclaimer.

Int. Cl. E06B *3/964*

U.S. Cl. 52—204.62 **16 Claims**



1. A frame for a sash moveable between an open and a closed position, the frame comprising:

a first jamb;

a first bracket receiver structure integral with said first jamb;

a second bracket receiver structure integral with said first jamb;

a second jamb opposite said first jamb;

a third bracket receiver structure integral with said second jamb and opposed to said first bracket receiver structure;

a fourth bracket receiver structure integral with said second jamb and opposed to said second bracket receiver structure; and

at least one frame-to-sash bracket configured to be removably secured to at least one of said first bracket receiver, said second bracket receiver, said third bracket receiver and said fourth bracket receiver;

wherein said frame-to-sash bracket is adapted to allow movement of the sash between the open and the closed positions.

US 6,330,770 B1

FREE ACCESS FLOOR

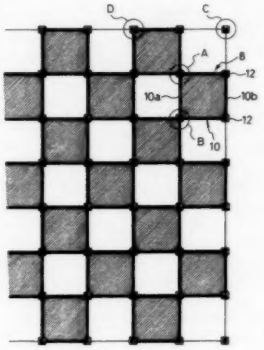
Kunihiko Fukunaga; Hironori Oshima, and Moritaka Sakamoto, all of Tokyo, Japan, assignors to Hitachi Kizai, Inc., Tokyo, Japan

Filed Nov. 23, 1999, Appl. No. 448,015

Claims priority, application Japan, Dec. 17, 1998, 10-375737

Int. Cl. E04C *2/52*

U.S. Cl. 52—220.2 **12 Claims**



1. A free access floor formed on a base floor with a predetermined space therebetween, comprising:

a plurality of panel support structures, each panel support structure is comprised of:

a square shaped frame where at least two adjacent sides of the frame are integrally formed of a plate member;

support units integrally provided at two corners of the square shaped frame for supporting a free access floor panel; and

grooves provided on bottom surfaces of the support units, each of the grooves having a thickness and a width substantially the same as that of the plate members of the square shaped frame so that corners of another panel support structure are able to fit in the grooves;

wherein the plurality of panel support structures are adapted to be aligned on the base floor by engaging the grooves of the support units of the panel support structure with the corners of the square shaped frame of another panel support structure at a side where there are no support units in such a way to receive the corners of the square shaped frame of another panel support structure in the grooves, thereby positioning the support units to support the free access floor panels thereon.

US 6,330,771 B1

SAFER SCHOOL MODULE AND ASSEMBLY

Charles W. Hester, Jr., 842 W. Main St., Laurens, S.C. 29360

Filed Feb. 4, 2000, Appl. No. 497,969

Int. Cl. E04H *3/08*

U.S. Cl. 52—234 **39 Claims**

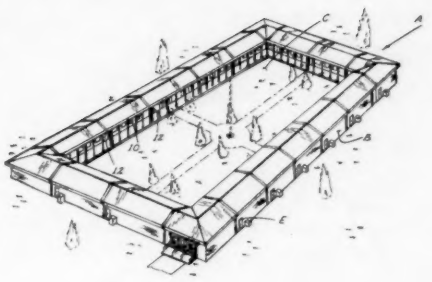
1. An expandable safe school complex for providing a secure environment for students against the entrance by an outside intruder comprising;

a plurality of individual classroom modules forming individual class rooms joined together to form a complex having an open air enclosed courtyard;

said classroom modules having a front entrance with a front door providing access between said classroom and said enclosed courtyard;

each of said classroom modules having an emergency exit formed in an exterior wall of each said classroom module opposite said courtyard walls opening to the outside of said complex away from said enclosed courtyard;

each said emergency door having an emergency latch securing said emergency door in secured closed position;



each said emergency latch having a single activating member within said classroom for releasing said emergency door to an open position for emergency escape;

a detector for detecting movement of said emergency door from said closed position and for generating a signal activating an alarm system in response to said movement; and,

said alarm system emitting a signal indicating that said emergency door has been moved from said closed position notifying the school complex that a classroom module is open away from said enclosed courtyard.

US 6,330,772 B1

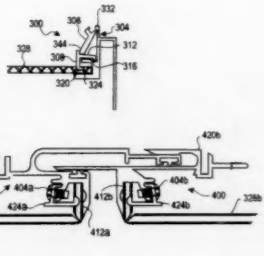
METHOD AND APPARATUS FOR ERECTING WALL PANELS

Everett Lee Mitchell, Evergreen, and Jed D. Mitchell, Lakewood, both of Colo., assignors to Elward Systems Corporation, Lakewood, Colo.

Continuation of application No. 08/989,748, filed on Dec. 12, 1997, now Pat. No. 5,916,100. This application Jun. 15, 1999, Appl. No. 334,124.

Int. Cl. E04B *2/16*

U.S. Cl. 52—235 **30 Claims**



1. A wall system, comprising:

(a) a panel having a groove in a first surface of the panel;

(b) a perimeter framing member for engaging a peripheral edge of the panel, the perimeter framing member having two opposing surfaces forming a pocket for receiving the panel; and

(c) an attachment member having a first bearing surface to be received in the groove in the first surface of the panel and a second bearing surface engaging a surface of the perimeter framing member to align and hold the panel in the pocket, wherein at least a portion of the attachment member is to be positioned between an opposing surface of the pocket and a surface of the panel

wherein the second bearing surface engages a surface of the perimeter framing member located outside of the pocket, when the panel is engaged with the attachment member.

US 6,330,773 B1

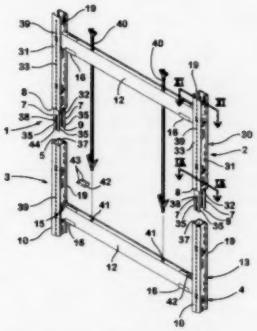
STACKING BRACKET FOR PARTITIONS

Douglas B. MacDonald, Caledonia; Jonathan J. King, East Grand Rapids; Steven E. Sanders, Byron Center; Alan E. Rheault, Grand Rapids; James R. Dykstra, Grandville, all of Mich.; Michael L. Waalkes, Athens, Ala.; David A. Walz, Grand Rapids, Mich.; Patricia A. Williams, East Grand Rapids, Mich.; Donald P. Gravel, Toronto, Canada, and Joseph Chang, Grand Rapids, Mich., assignors to Steelcase Development Corporation, Caledonia, Mich.

Filed Apr. 16, 1999, Appl. No. 293,196

Int. Cl. E04H *1/00*

U.S. Cl. 52—239 **33 Claims**



1. An extension panel for connection to a lower panel of the type having vertical uprights defining upper ends and including a utilities passageway extending along an upper edge of the lower panel for receiving utility conduits therein, said extension panel comprising:

a pair of spaced-apart upright posts, each having a lower end;

at least one beam extending between said posts and rigidly interconnecting the same;

a pair of structural members extending downwardly from each said lower and of each post to engage the upper ends of the vertical uprights of the lower panel and rigidly interconnect said extension panel and the lower panel;

said structural members laterally spaced-apart to define a transverse, downwardly-opening utilities opening therebetween,

said utilities opening positioned in alignment with said utilities passageway of the lower panel to permit utility conduits to pass through said utilities opening when said extension panel is secured to the lower panel.

US 6,330,774 B1

PREFABRICATED TILED PANEL SYSTEM

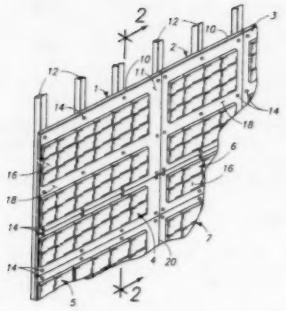
Albert I Weinstein, 28710 Alford Dr., Rancho Palos Verdes, Calif. 90275

Continuation-in-part of application No. 09/334,899, filed on Jun. 17, 1999, now Pat. No. 6,128,793. This application Jul. 25, 2000, Appl. No. 624,833.

Int. Cl. B44F *7/00*

U.S. Cl. 52—314 **7 Claims**

1. A system of prefabricated tiled panels for installation on framing studs in a predetermined configuration to produce a complete design pattern tiled surface area for a wall, floor or counter area; said system comprising a multiplicity of tiled panels; each of said panels comprising a flat, rigid base member and a number of tiles that are affixed to said base member with an adhesive and grouted to form a selected tiled array, said array being a previously defined segment of said design pattern tiled surface area, the surface area of said base member being covered by tiles except for open strips adjacent to the edges of the base member and strips between tiles, which are required to permit fastening panels to said framing studs by nails, screws or other fastening, said strips



adjacent to the edges of the base member being also required to permit proper joining of one panel to the next adjacent panel during system installation; each of said panels having a width that is a multiple of the spacing between centers of said framing studs in order to facilitate fastening of said panels at near their edges to said framing studs; each of said panels having dimensions determined by a previously conducted panel layout procedure;

said tiled panels to be installed in a predetermined configuration and fastened to said frame studs, having an adhering tape applied to the open base member strips spanning joint edges between abutting panels, and having finish tiles added, adhered and grouted in panel untiled spaces including those spanning panel edges, to complete the installation of a design pattern tiled surface area.

US 6,330,775 B1

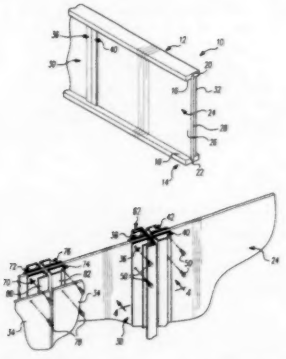
PREFABRICATED BUILDING WALL STRUCTURE

Richard L. Hubbard, 11191 Riverdall Ct., Pinckney, Mich. 48169

Filed Jul. 20, 1999, Appl. No. 357,505

Int. Cl. E04B *9/00;* **E04C** *2/34*

U.S. Cl. 52—474 **17 Claims**



1. A prefabricated structure for use in constructing a building wall, said structure comprising:

a first elongated joist;

second elongated joist extending in parallel and spaced apart fashion relative to said first joist;

each of said first and second joists having an opposing and parallel extending face with a recessed channel formed therein;

at least one elongate and planar shaped board, said board, belong substantially rectangular in shape and including a first edge, a second edge, a third edge, and a fourth edge, said edges defining in combination a first exterior face and a second opposite exterior face spaced from said first face by a thickness;

a first selected edge of said planar board securing in extending fashion within said recessed channel of said first joist, a further selected and parallel extending edge securing within said recessed channel of said second joist; a plurality of elongated brackets, each of said brackets further including, in cross section, a first exterior planar side, a second spaced and parallel extending exterior planar side, and an interconnecting portion extending between said first planar side and said second planar side;

a first sub-plurality of said elongated brackets extending between said first and second joists with one of said first and second planar side secured against said first exterior face of said planar shaped board;

a second sub-plurality of said elongated brackets extending between said first and second joists with one of said first and second planar sides secured against said second exterior face of said planar shaped board; and

a wallboard material secured in a parallel extending and spaced relationship and against an outer-most extending surface of said brackets associated with at least one of said first and second faces of said elongate and planar shaped board.

US 6,330,776 B1

STRUCTURE FOR REINFORCING CONCRETE MEMBER AND REINFORCING METHOD

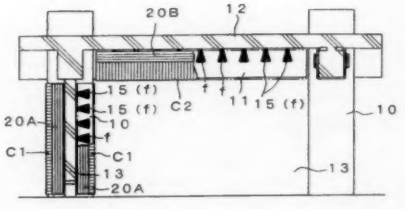
Yasuo Jinno; Hideto Saito; Hideo Tsukagoshi; Jun'ichi Iketani; Tadao Fujita; Minoru Sawaide; Yasuo Inada, and Yoshihiko Shimizu, all of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 2, 2000, Appl. No. 517,509

Claims priority, application Japan, Sep. 16, 1997, 9-251193; Sep. 16, 1997, 9-251194; Sep. 16, 1997, 9-251195; Jan. 6, 1998, 10-001126; May 27, 1998, 10-146403; Jul. 14, 1998, 10-199317; Jul. 22, 1998, 10-206982; Jul. 22, 1998, 10-206983; Jul. 22, 1998, 10-206984; Jul. 22, 1998, 10-206985

Int. Cl. E04G *23/02*

U.S. Cl. 52—649.1 **32 Claims**



1. A reinforced concrete structure comprising:

a concrete member;

a fixing anchor which comprises a bundle of reinforcing fiber, said bundle of reinforcing fiber having a bundled part and at least one unbundled part; and

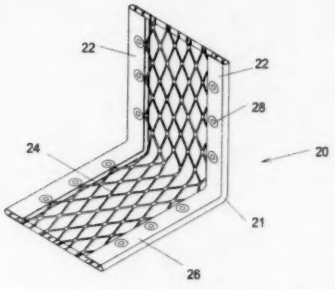
a reinforcing member in the form of one of a plate and a sheet;

wherein the bundled part of said fixing anchor is embedded into the concrete member and the, at least one unbundled part is spread and adhered on to the concrete member using resin adhesives;

the reinforcing member is applied to the concrete member so as to overlap at least edges of the reinforcing member onto the unbundled part of the fixing anchor; and

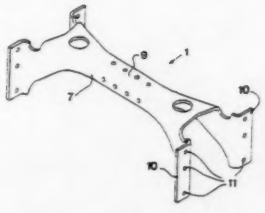
the unbundled part of the fixing anchor is sandwiched between the concrete member and the reinforcing member.

US 6,330,777 B1
THREE DIMENSIONAL METAL STRUCTURAL ASSEMBLY AND PRODUCTION METHOD
Anthony David Padley, Toronto, Canada, assignor to TCW Technologies Inc., Toronto, Canada
Filed Jul. 20, 1999, Appl. No. 357,232
Int. Cl. E04C *2/42*
U.S. Cl. 52—670 **36 Claims**



1. A three-dimensional metal structural assembly comprising at least one composite strip including a web consisting of expanded material having a pair of longitudinal edges, a pair of edge pieces attached to the longitudinal edges for strengthening the composite strip, wherein said composite strip has at least one bend transverse to the longitudinal axis therein to form a structural element.

US 6,330,778 B1
BEAM ARRANGEMENT
Bertil Jakobsson, Nykvarn, Sweden, assignor to Scania CV Aktiebolag (publ), Sweden
Filed Feb. 22, 1999, Appl. No. 255,462
Claims priority, application Sweden, Feb. 26, 1998, 9800573
Int. Cl. E04C *3/30*
U.S. Cl. 52—729.1 **12 Claims**



1. A beam arrangement for connecting between two separated frame side members in a vehicle, wherein the side members extend in a longitudinal direction of the vehicle, the beam arrangement comprising:

a first and a second side portion which are separated from each other along the frame side members, each side portion connected between both of the frame side members, each side portion being shaped to extend in a substantially vertical plane;

a connecting portion connecting the separated side portions;

the beam arrangement including end regions toward the frame side members and a central region between the frame side members;

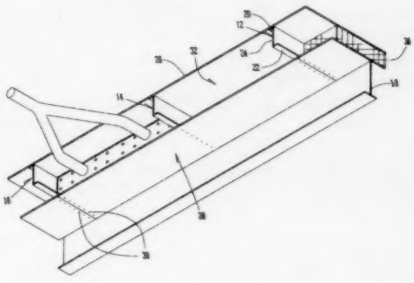
each of the side portions extending in from both of the frame side members toward the central region;

at each end region of the beam arrangement, each side portion converging generally toward the other side portion inward from both of the frame side members and toward the central region of the beam arrangement, and each of the side portions in one end region extends along a substantially common line with the diagonally opposite part of the other side portion in the other end region;

at the central region, the side portions remaining spaced apart, wherein each of the side portions converges from both of the frame side members through both end regions and toward the central region and converges in a direction toward a point situated in the central region of the beam arrangement which point is substantially common to both end regions and the side portions converge toward each other;

the beam arrangement further including an intermediate region between the end regions, the side portions converging to the intermediate region and extending substantially parallel and spaced apart in the intermediate region; at least the intermediate region of the beam arrangement is U-shaped in cross-section with the connecting portion defining the closed end of the U and the side portions defining the legs of the U.

US 6,330,779 B1
INSULATED CEILING FOR METAL BUILDINGS AND METHOD OF INSTALLING SAME
Kevin W. Kinzler, Ames, Iowa, assignor to Kinzler Construction Services, Inc., Ames, Iowa
Filed Jun. 28, 2000, Appl. No. 605,111
Int. Cl. E04B *1/00;* **E04G** *21/00*
U.S. Cl. 52—742.13 **27 Claims**



12. An apparatus for filling a ceiling or wall section with insulating material comprising:

a blower connected to a source of insulating material;

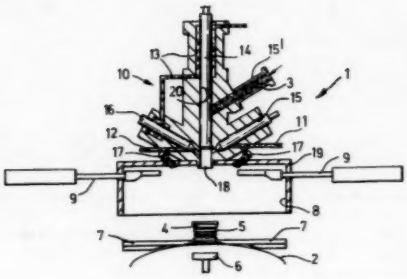
a manifold assembly including an inlet conduit connected to the blower, a manifold plate having front and rear surfaces and a peripheral edge, and a seal attached to and extending around the peripheral edge;

the manifold plate having at least one inlet opening therein, at least one outlet opening connected to the inlet opening, and at least one spaced air hole therethrough.

US 6,330,780 B1
APPARATUS AND METHOD FOR FILLING
Malcolm Shipway, Bristol, United Kingdom, assignor to David S. Smith Packaging Limited, United Kingdom
Filed Aug. 2, 1999, Appl. No. 365,687
Claims priority, application United Kingdom, Jul. 9, 1999, 9916215
Int. Cl. B65B *55/04*
U.S. Cl. 53—426 **15 Claims**

1. Apparatus for sterilizing a container for product during filling thereof, comprising:

(i) means having a first part for dispensing product in a sterile manner; and



(ii) a second part adapted for sterilizing a container and for applying a closure to an orifice thereof during filling, the apparatus further comprising at least one flow path for a sterilizing medium, and at least one reciprocable plunger to control the flow of the sterilizing medium through said at least one flow path.

US 6,330,781 B1

SAFETY SUPPORT

Erwin Meroth, Maternusstrasse 3, D-50996 Köln, Germany

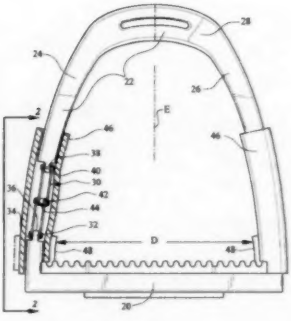
PCT No. PCT/DE98/01192, § 371 Date Feb. 11, 2000, § 102(e) Date Feb. 11, 2000, PCT Pub. No. WO99/08957, PCT Pub. Date Feb. 25, 1999

PCT Filed Apr. 29, 1998, Appl. No. 485,644

Claims priority, application Germany, Aug. 14, 1997, 197 35 211

Int. Cl. B68C *3/02*

U.S. Cl. 54—49 **12 Claims**



1. A safety stirrup with a web plate and with a U-shaped upper part which has two lateral legs and an upper base region, the two lateral legs being each provided with an articulated area having swivel axles running across the plane defined by the upper part and two connecting areas arranged opposite each other and connected by a connecting part, said connecting areas being each provided with a bore for the swivel axle, wherein each articulated area is provided with at least three swivel axles, each connecting area has a bow-shaped part limited by two flattened areas running parallel to the mentioned plane and two adjacent hinge pins are connected together by means of two connecting parts each.

US 6,330,782 B1

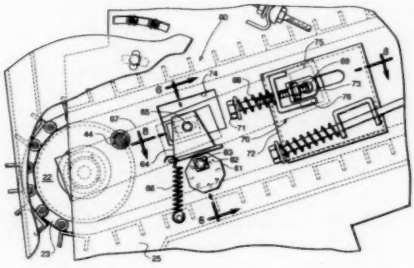
FRONT DRUM ADJUSTMENT MECHANISM FOR A FEEDERHOUSE ON AN AGRICULTURAL COMBINE

Michael J. Digman, Denver; James D. Walker, Lititz, and James Bennett, Narvon, all of Pa., assignors to New Holland North America, Inc., New Holland, Pa.

Division of application No. 09/285,141, filed on Apr. 1, 1999, now Pat. No. 6,116,008. This application May 1, 2000, Appl. No. 561,877.

Int. Cl. A01D *34/03;34/43;34/64*

U.S. Cl. 56—15.8 **14 Claims**



1. In an agricultural combine having a frame adapted for movement across a field of crop, threshing and separating mechanisms mounted on said frame to thresh and separate grain from crop material, a header for severing crop material from the field and consolidating it, a feederhouse interconnecting said frame and said header for supporting said header and transporting the crop material from said header to said threshing and separating mechanisms, and a motor and transmissions mounted on said frame for providing rotational movement to said wheels and operative power to said header, feederhouse, and threshing and separating mechanisms, the improvement comprising:

said feederhouse includes two elongate opposing first and second side sheets, a top and an opposing floor fitted together to form a generally elongate box with opposing front and rear openings; said first side sheet having inside and outside surfaces, and a generally rectangular adjustment aperture therethrough;

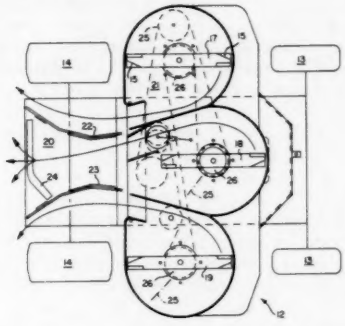
a crop conveyor supported within said feederhouse between a front drum and a rear drum, said front drum being adjacent said front opening of said feederhouse and said rear drum being adjacent said rear opening of said feederhouse and pivotably supported by said frame about a first axis generally perpendicular to the direction of movement of said combine;

an elongate drum arm having first and second opposing ends; said front drum rotatably affixed to said drum arm adjacent said first end thereof; said second end of said drum arm pivotably affixed by a pivotable mounting to said first side sheet about a second axis generally parallel to said first axis such that said front drum may be moved toward and away from said floor; and

an adjustment mechanism including an adjustment plate adjacent said outside surface and affixed to said pivot arm via a connector extending through and slidable within said adjustment aperture, said adjustment plate of such dimensions that it is larger than said adjustment aperture no matter what the position of said connector inside said adjustment aperture; and

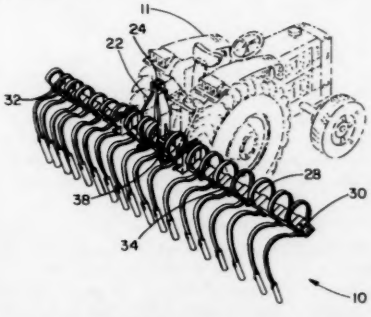
a cam adjustably affixed to said outside surface of said first side sheet adjacent to and in contact with said adjustment plate, said cam is polygon-shaped with multiple sides functioning as cam surfaces and is rotatably affixed to said first side sheet about an off-center axis such that rotation of said cam adjusts the position of said drum arm, whereby adjustment of said cam selectively moves said adjustment plate and said pivot arm.

US 6,330,783 B2
MOWER DECK
Lonnie Oxley, Versailles, Ky., assignor to The Lonmore Company, Means, Ky.
Division of application No. 09/363,987, filed on Jul. 15, 1999, now Pat. No. 6,185,920, Provisional application No. 60/115,437, filed on Jan. 7, 1999. This application Dec. 23, 2000, Appl. No. 745,964.
Int. Cl. A01B *34/12*
U.S. Cl. 56—320.2 **4 Claims**



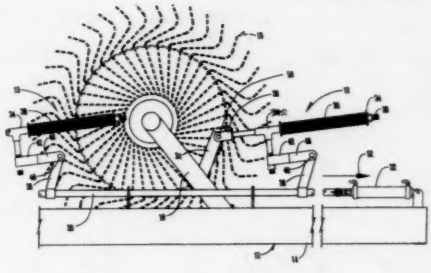
1. A mower deck adapted to be mounted on a self-propelled tractor having front and rear ground engaging wheels, the tractor providing a source of power for the deck when the tractor is engaged for a mowing operation, the deck comprising a compartment defined by annular interior walls forming a blade chamber, a rotary shaft centrally located in the chamber for mounting a cutting blade thereon, drive means connectable to the shaft and engageable with the source of power of the tractor during a mowing operation for rotating the blade, and a rear discharge pathway having a front inlet and rear outlet opening for cuttings forced from the blade chamber by the rotation of the blade opening rearwardly into the front inlet from the blade chamber and diverging longitudinally near the outlet opening to a width substantially greater than the width of the inlet opening.

US 6,330,784 B1
RAKE ASSEMBLY
Steve V. Kutach, III, 503 Fulton Ave., Rockport, Tex. 78382, and Steve V. Kutach, Jr., P.O. Box 94, Rock Island, Tex. 77470
Filed Feb. 4, 2000, Appl. No. 497,929
Int. Cl. A01D *76/00*
U.S. Cl. 56—375 **11 Claims**



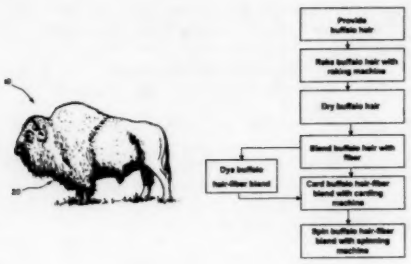
1. A rake assembly, said assembly being mountable to a tractor, said assembly comprising:
a mounting assembly for mounting to a tractor;
an arm having a first end, a second end and a middle portion, said arm being fixedly coupled to said mounting assembly;
securing means for securing said arm to the tractor;
a plurality of fingers for raking the ground surface, each of said fingers being mountable to said arm, each of said fingers comprising:
an elongate member having a first end, a second end and a middle portion, said middle portion of said elongate member having a curve therein such that a length of said elongate member forms a loop that loops about the first end so that said middle portion loops about said arm when said fingers are mounted on said arm;
a bracket for securing said elongate member to said arm; and
a head portion mounted on said second end of said elongate member for contacting the ground surface.

US 6,330,785 B1
WHEEL RAKE SPRING ASSEMBLY
Dan D. Rowse, 2315 N., Ord, Nebr. 68862, and Ron A. Rowse, HC80 Box 43, Burwell, Nebr. 68823
Continuation of application No. 09/285,543, filed on Apr. 2, 1999, now Pat. No. 6,220,008. This application Nov. 6, 2000, Appl. No. 707,122.
This patent is subject to a terminal disclaimer.
Int. Cl. A01D *78/08;80/00*
U.S. Cl. 56—377 **2 Claims**



1. A farm equipment implement having a main frame to which an arm is moveably connected, an actuating rod is moveable on said main frame for moving said arm through a spring assembly, said spring assembly comprising,
a rod connected at one end to said arm and having a stop at its opposite end,
a sleeve on said rod,
a coil spring on said rod between said sleeve and said stop,
linkage connecting said sleeve to said actuating rod whereby movement of said actuating rod for moving said arm places said coil spring in compression, and
said linkage being pivotally connected between said sleeve and said actuating rod such that said linkage will transmit a tension force, but not a compressive force whereby unintended moving of said arm will not transmit a compressive force to said actuating rod.

US 6,330,786 B1
BUFFALO HAIR YARN AND FABRIC AND METHOD OF MAKING BUFFALO HAIR YARN AND FABRIC
Sheri Stotz Settle, Rapid City, S. Dak., assignor to Great Plains Buffalo Products, Inc., Rapid City, S. Dak.
Filed Sep. 10, 1999, Appl. No. 393,978
Int. Cl. D02G *3/02;* **D01B** *3/00*
U.S. Cl. 57—200 **19 Claims**
1. A yarn comprising buffalo hair having a solid core and fiber,


Provide buffalo hair
Rake buffalo hair with raking machine
Dry buffalo hair
Blend buffalo hair with fiber
Dye buffalo hair-fiber blend
Card buffalo hair-fiber blend with carding machine
Spin buffalo hair-fiber blend with spinning machine

wherein said yarn comprises between about 5% to about 95% buffalo hair and between about 5% to about 95% fiber.

US 6,330,787 B1

MONITORING CONTROL DEVICE WITH REAL TIME DATA SAMPLING FOR MACHINE USED IN THE CABLE INDUSTRY

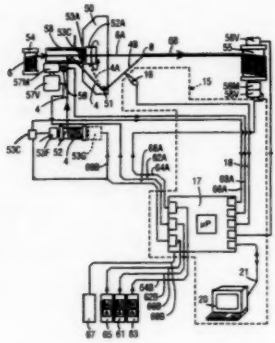
Yves Michnik, Saint Ismier, France, assignor to Innocable SA, Saint Ismier, France

PCT No. PCT/FR98/00028, § 371 Date Jun. 21, 2000, § 102(e) Date Jun. 21, 2000, PCT Pub. No. WO99/35329, PCT Pub. Date Jul. 15, 1999

PCT Filed Jan. 8, 1998, Appl. No. 582,035

Int. Cl. D01H *13/14*

U.S. Cl. 57—264 **6 Claims**



1. A monitoring and control device for an assembly machine designed to perform a winding operation of at least one wire element onto a main cable to form a wound cable, said assembly machine being equipped with actuators comprising:

a winding head which guides said wire element wound on at least one feeder coil,

a first head motor for driving the winding head in rotation,

a second motor for driving in rotation a receiver coil on which said wound cable is wound,

and means for mechanical tensioning of the wire element when the winding phase takes place,

said monitoring and control device comprising:

an optical measuring apparatus containing at least one light emitter for projection of a light beam onto the wire element, and a receiver for sensing the reflected light beam with production of a measurement signal,

a processing circuit with microprocessor designed to receive said measurement signal and to send control and/or adjustment signals to said actuators,

and an external control means comprising in particular a microcomputer for input of automatic operation parameters of the assembly machine according to a predetermined program of the processing circuit,

characterized in that:

the microprocessor of the processing circuit receives and samples data coming from the optical measuring apparatus to know the position of the wire element and its behavior in mechanical vibration in real time before the wire element is wound onto the main cable,

storage means, are programmed to store data concerning the values of maximum, minimum and mean vibrations of the wire element to observe the vibratory behavior and positioning of said wire element in real time on the screen page of the microcomputer, so as to generate a self-correction function should a drift of the position and vibration data of the wire element occur,

and electrical control means of the first motor, of the second motor, and of the mechanical tensioning means are arranged to re-establish optimum operation of the assembly machine, the resident program of the storage means enabling the assembly machine to be loop-locked to the position and vibration of the wire element with respect to the main cable.

US 6,330,788 B1

PLATE CHAINS WITH WEAR-RESISTANT CHAIN JOINTS

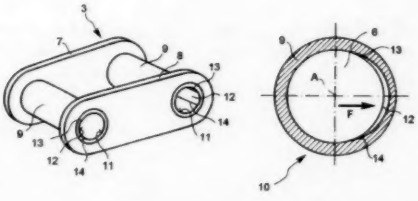
Gerhard Winklhofer, Krailling, Germany, assignor to Joh. Winklhofer & Soehne GmbH und Co. KG, Munich, Germany

Filed May 22, 2000, Appl. No. 575,744

Claims priority, application European Pat. Off., Jul. 14, 1999, 99113794

Int. Cl. F16G *13/06*

U.S. Cl. 59—4 **11 Claims**



1. A plate chain comprising in combination outer and inner chain links (**2**, **3**) which are interconnected at joint places (**10**) formed as slide bearings, each of said joint places (**10**) being formed by a sleeve (**9**) of said inner chain link (**3**) and by a pin bolt (**6**) of said outer chain link (**2**) which in said sleeve (**9**) substantially rotates about its own axis (A), at least one portion of a lateral surface of said pin bolt (**6**) engaging a facing portion of the inner surface (**11**) of said sleeve (**9**) when a pulling force is exerted on the plate chain to define a pulling side (**15**) of said joint place (**10**), said at least one portion of said lateral surface of said pin bolt (**6**) and said facing portion of the inner surface (**11**) of said sleeve (**9**) having different circumferential contours so that said pin bolt (**6**) is supported on said sleeve (**9**) at at least two circumferentially spaced-apart points or lines of contact at said pulling side (**15**).

US 6,330,789 B2

METHODS OF OPERATION A DUAL-FUEL INJECTOR FOR A GAS TURBINE WITH SIMULTANEOUS LIQUID AND GASEOUS FUELS INJECTION DURING TRANSIENTS

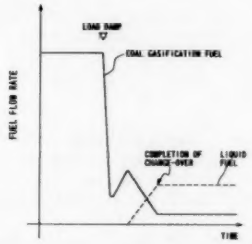
Akihiro Onoda, Kawasaki, and Yasunori Iwai, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of application No. 09/138,674, filed on Aug. 24, 1998, now Pat. No. 6,199,368. This application Jan. 4, 2001, Appl. No. 753,558.

Claims priority, application Japan, Aug. 22, 1997, 9-226606

Int. Cl. F02L *9/00*

U.S. Cl. 60—39.03 **5 Claims**



1. A method of operating a coal gasification combined cycle power generation plant including a gas turbine system, a fuel supply system, an air supply system and an exhaust gas system, which are operatively connected to each other, said gas turbine system including a combustor provided with means for selectively burning a coal gasification fuel obtained by gasifying a coal and a liquid fuel atomized by an atomization air and a gas turbine to which a combustion gas generated in the combustor is supplied, said combustor being provided with a fuel nozzle, a liner disposed inside the combustor and a combustion air passage formed between the liner and an outer casing of the combustor, said fuel supply system being provided with a liquid fuel supply passage for the combustor through the fuel nozzle, an atomization air supply passage for the combustor through the fuel nozzle and a coal gasification fuel supply passage for the combustor through the fuel nozzle, all of said supply passages being arranged so as to be adjacent to each other, said method comprising the steps of:

carrying out an operation by the combustion of the liquid fuel during a start-up of the gas turbine;

carrying out an operation by the combustion of the coal gasification fuel after a predetermined time elapsed thereafter;

changing over the coal gasification fuel operation into an operation by the combustion of the liquid fuel in a case where a gas turbine load becomes less than a fixed load; and

supplying the coal gasification fuel of a fixed amount from the coal gasification fuel supply passage to the combustor through the fuel nozzle after a change-over is made from a combustion operation by the coal gasification fuel to a combustion operation by the liquid fuel.

US 6,330,790 B1

OIL SUMP BUFFER SEAL

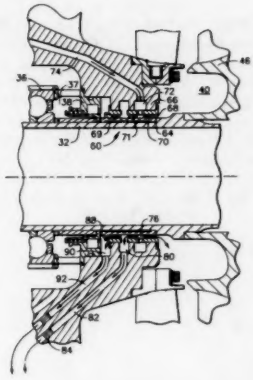
Gulshan K. Arora, Mesa; Donn A. Groninger; Francis Leech, both of Tempe, and Bobby J. Hobbs, Chandler, all of Ariz., assignors to AlliedSignal, Inc., Morris Township, N.J.

Filed Oct. 27, 1999, Appl. No. 428,092

Int. Cl. F02C *7/06*

U.S. Cl. 60—39.08 **16 Claims**

8. A buffer labyrinth seal system comprising: a labyrinth seal having a first and second sections; a buffer air supply annulus disposed between said first and second sections for delivering pressurized air from a conduit to said first and second sections; a



first drain annulus disposed adjacent said second section on the side of said second section opposite the side adjacent said buffer air supply annulus; said first section having three knife seals, said second section having one knife seal and a slinger.

US 6,330,791 B1

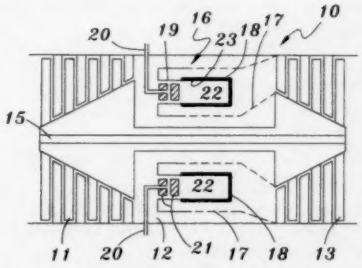
BURNER FOR OPERATING GAS TURBINES WITH MINIMAL NO_x EMISSIONS

Robert M. Kendall, Sunnyvale, and Steven J. Greenberg, Santa Clara, both of Calif., assignors to Alzeta Corporation, Santa Clara, Calif.

Division of application No. 09/235,209, filed on Jan. 22, 1999, now Pat. No. 6,199,364. This application Sep. 20, 2000, Appl. No. 666,058.

Int. Cl. F23R *3/06*

U.S. Cl. 60—39.11 **15 Claims**



1. An improved burner for gas turbines operable at high pressure with high excess air to produce combustion gases with low content of air pollutants, which comprises a plenum with an inlet for the injection of gaseous fuel and admixed compressed air, a porous fiber burner face attached across said plenum, said burner face having areas that yield, when fired at atmosperic pressure, radiant surface combustion and interspersed areas of higher porosity that yield blue flame combustion, a perforated shell within said plenum behind said burner face, and a metal liner positioned to provide a compact combustion zone adjacent said burner face, said liner having multiple openings to permit cooling compressed air to pass therethrough and merge with gases of said combustion zone.

US 6,330,792 B2

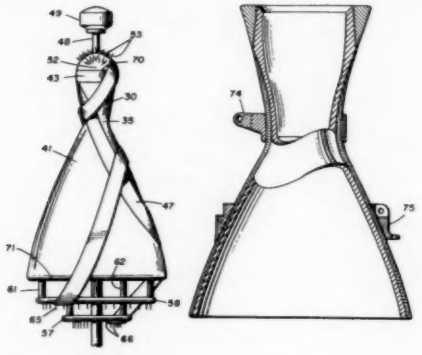
ROCKET ENGINE THRUST CHAMBER ASSEMBLY

Charles S. Cornelius; Richard H. Counts; W. Neill Myers, all of Huntsville; Jeffrey D. Lackey, Arab; Warren Peters, Meridianville; Michael D. Shadoan, Madison; David L. Sparks, Huntsville, and Timothy W. Lawrence, Madison, all of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of application No. 09/228,034, filed on Dec. 10, 1998, now Pat. No. 6,195,984. This application Dec. 22, 2000, Appl. No. 747,979.

Int. Cl. F02K *9/00*

U.S. Cl. 60—257 7 Claims



1. A method for making in substantially one piece a thrust chamber assembly for a rocket engine, said assembly having a combustion chamber a throat and a nozzle connected in series, comprising

a. providing a two-piece mandrel having a configuration of said combustion chamber, throat and nozzle portions portion, said mandrel having an axis;

b. wrapping the mandrel with a generally flat fabric tape saturated with a curable thermosetting resin; said tape having first and second edges, said tape width being positioned at an acute angle with respect to said axis such that one of the edges of the tape is in contact with the mandrel and the other edge is spaced from the mandrel;

c. curing the thermosetting resin;

d. wrapping the assembly with a tow of graphite fibers wetted with an epoxy resin to form a structural layer; and

e. curing the epoxy resin.

US 6,330,793 B1

EROSION RESISTANT ROCKET NOZZLE

Kent P. Hennessey, Fairfax, Va., assignor to Atlantic Research Corporation, Gainesville, Va.

Filed Jul. 2, 1999, Appl. No. 346,686

Int. Cl. F02R *1/00*

U.S. Cl. 60—271 8 Claims

1. A rocket nozzle comprising:

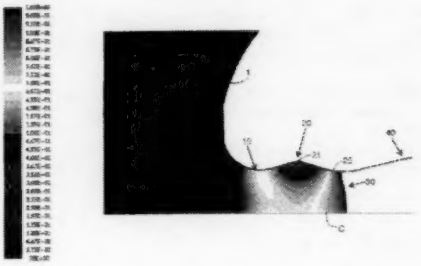
a nozzle member having an inlet, a middle region, a throat and an outlet;

said middle region having a shape which defines an apex of greater cross-sectional area than that of said inlet and said throat;

said inlet being curved; and

the intersection between said middle region and said throat being angular;

whereby when combustion gases are directed toward said inlet, solid particles therein are accelerated through said inlet at an angle to the centerline thereof and are siphoned away from the throat to prevent significant impingement thereon, while the flow velocity of combustion gases near said throat is reduced from the flow velocity of solid particles near the centerline thereof.



US 6,330,794 B1

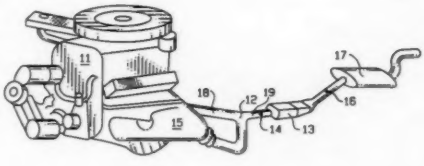
METHOD AND APPARATUS FOR USING FREE RADICALS TO REDUCE POLLUTANTS IN THE EXHAUST GASES FROM THE COMBUSTION OF A FUEL

Robert P. Caren, Westlake Village; Leon Ekchian, Northridge, both of Calif., and Jack A. Ekchian, Belmont, Mass., assignors to Litex, Inc., Cambridge, Mass.

Continuation of application No. 08/947,287, filed on Oct. 7, 1997, which is a continuation-in-part of application No. 08/768,833, filed on Dec. 18, 1996, now Pat. No. 5,863,413. This application Dec. 17, 1999, Appl. No. 466,433. This patent is subject to a terminal disclaimer.

Int. Cl. F01N *3/00*

U.S. Cl. 60—274 81 Claims



1. An apparatus for reducing at least one pollutant in an exhaust gas stream containing exhaust gas formed from the combustion of fuel in an engine having a combustion gas stream, which comprises a precombustion gas stream and the exhaust gas stream, the apparatus comprising:

a catalytic convertor, having an inlet and an outlet, wherein the catalytic convertor is positioned such that at least a portion of the exhaust gas stream from the engine passes through the catalytic convertor;

a corona discharge device for producing a corona discharge in the exhaust gas, the corona discharge device comprising at least one first electrode, at least one second electrode positioned a distance from the first electrode, and dielectric material positioned between the first electrode and the second electrode; and

a high frequency power supply having an operational frequency of at least about 1,000 Hz adapted to provide electrical power to the corona discharge device,

wherein the apparatus is configured and adapted such that only a portion of the exhaust gas stream is exposed to the corona discharge to produce radicals from gaseous species in the exhaust gas stream, and the radicals are introduced into the combustion gas stream at a point upstream of or at the catalytic convertor.

US 6,330,795 B1

DIAGNOSTIC EQUIPMENT FOR AN EXHAUST GAS CLEANING APPARATUS

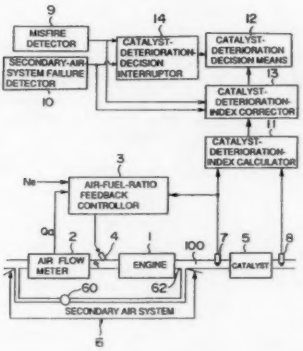
Yutaka Takaku, Katsuta, and Toshio Ihshii, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application No. 09/282,148, filed on Mar. 31, 1999, now Pat. No. 6,089,016, which is a division of application No. 08/795,142, filed on Feb. 7, 1997, now Pat. No. 5,921,078, which is a continuation of application No. 08/224,881, filed on Apr. 8, 1994, now Pat. No. 5,743,085. This application Jun. 21, 2000, Appl. No. 598,054.

Claims priority, application Japan, Apr. 9, 1993, 5-83326

Int. Cl. F01N *3/00*

U.S. Cl. 60—277 **4 Claims**



1. A diagnostic equipment for an exhaust gas cleaning apparatus; said exhaust gas cleaning apparatus being usable in an engine system furnished with an air-fuel-ratio controller which detects an air fuel ratio of exhaust gas emitted from an engine and which adjusts a quantity of fuel injection so as to hold the air fuel ratio of the exhaust gas at a predetermined value, and cleaning said exhaust gas by means of a catalyst;

said diagnostic equipment, comprising:

a first air-fuel-ratio sensor which detects the air fuel ratio of the exhaust gas upstream of said catalyst;

a second air-fuel-ratio sensor which detects the air fuel ratio of the exhaust gas downstream of said catalyst;

catalyst-deterioration-index calculation means for calculating a catalyst deterioration index indicative of a deterioration state of said catalyst from output signals of said first air-fuel-ratio sensor and said second air-fuel-ratio sensor;

catalyst-deterioration decision means endowed with a predetermined threshold value, for deciding the deterioration state of said catalyst through a comparison between the threshold value and the catalyst deterioration index;

abnormally detection means for detecting any abnormality of said engine system as affects said catalyst deterioration index; and

at least one member selected from the group consisting of catalyst-deterioration-index correction means for correcting said catalyst deterioration index when the abnormality has been detected by said abnormality detection means, and catalyst-deterioration-decision interruption means for interrupting the decision of said catalyst-deterioration decision means when the abnormality has been detected by said abnormality detection means, wherein said abnormality detection means comprises misfire detection means for detecting a combustion state of said engine so as to detect occurrence of misfire of said engine.

US 6,330,796 B1

CONTROL DEVICE FOR DIRECT INJECTION ENGINE

Hirofumi Nishimura; Youichi Kuji; Seiko Kono; Hiroyuki Yamashita, and Keiji Araki, all of Fuchu-cho, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

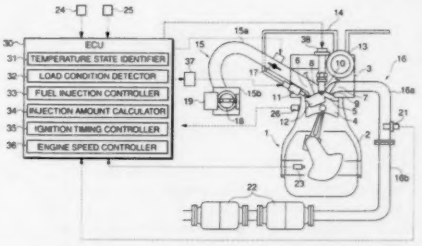
PCT No. PCT/JP99/04180, § 371 Date Mar. 30, 2000, § 102(e) Date Mar. 30, 2000, PCT Pub. No. WO00/08328, PCT Pub. Date Feb. 17, 2000

PCT Filed Aug. 3, 1998, Appl. No. 509,606

Claims priority, application Japan, Aug. 3, 1998, 10-232243

Int. Cl. F01N *3/00*

U.S. Cl. 60—286 **31 Claims**



1. A control device for a direct injection engine having a catalyst provided in an exhaust passage for converting exhaust gases and an injector for injecting fuel directly into a combustion chamber, the control device comprising:

a temperature state identifier for judging the temperature state of the catalyst; and

a fuel injection controller for controlling fuel injection from the injector;

wherein the fuel injection controller controls the injector based on judgment results of the temperature state identifier in such a way that the injector makes at least two-step split injection during a period from an intake stroke to an ignition point including a later injection cycle performed in a middle portion of a compression stroke or later and an earlier injection cycle performed prior to the later injection cycle at least in a low-load range of the engine when the catalyst is in its unheated state, in which its temperature is lower than its activation temperature, and the later injection cycle and earlier injection cycle inject fuel which contribute to a main combustion during a main combustion period in which approximately 10% to 90% by mass of the injected fuel is burned from start to end of combustion occurring in the combustion chamber.

US 6,330,797 B1

HYDRAULIC CIRCUIT FOR TURNING EXCAVATOR

Masami Kondo, Osaka, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

PCT No. PCT/JP97/03288, § 371 Date Mar. 4, 1999, § 102(e) Date Mar. 4, 1999, PCT Pub. No. WO98/12391, PCT Pub. Date Mar. 26, 1998

PCT Filed Sep. 18, 1997, Appl. No. 254,514

Claims priority, application Japan, Sep. 19, 1996, 8-247883

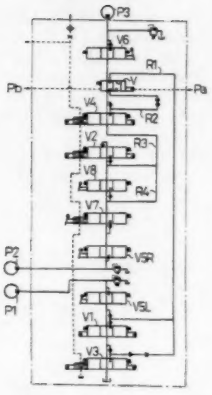
Int. Cl. F16D *31/02*

U.S. Cl. 60—421 **8 Claims**

1. A hydraulic circuit system for a turning excavator, comprising:

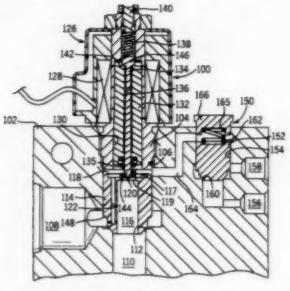
a first hydraulic pump and a second hydraulic pump, wherein one of said first and second hydraulic pumps is fluidly connected to a first hydraulic circuit that supplies pressure oil for driving a boom; and

at least one hydraulic third pump for supplying pressure oil fluidly connected to a second hydraulic circuit for turning an excavator body, wherein, while said boom is driven and said excavator body is turned simultaneously, said at least one hydraulic third pump is also fluidly connected to said first



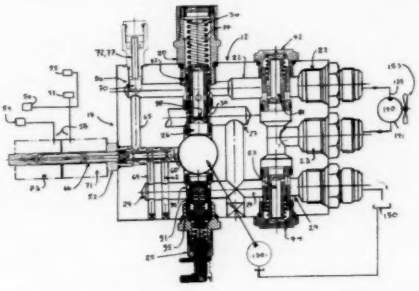
hydraulic circuit so as to additionally provide a part of the pressure oil supplied for turning said excavator body to said first hydraulic circuit, thereby accelerating operation of said boom.

US 6,330,798 B1
HYDRAULIC SYSTEM WITH SHADOW POPPET VALVE
Dwight Stephenson, Delafield, Wis., assignor to Husco International, Inc., Waukesha, Wis.
Provisional application No. 60/196,344, filed on Apr. 12, 2000. This application May 18, 2000, Appl. No. 573,751.
Int. Cl. F16D *31/02*
U.S. Cl. 60—424 **11 Claims**



9. A hydraulic system comprising:
a pump;
a tank;
a first hydraulic operator having a first port and a second port;
a second hydraulic operator having a first port and a second port;
a first valve assembly, a second valve assembly and a third valve assembly, each one of which comprises a main control valve and a shadow valve, wherein the main control valve has a main valve poppet slidably located within a first bore to control flow of fluid between a first inlet and a first outlet and defining a first control chamber on a side of the main valve poppet that is remote from the first outlet, and a selectively moveable pilot poppet engaging and controlling movement of the main valve poppet, and wherein the shadow valve has a shadow poppet slidably located within a second bore to control flow of fluid between a second inlet and a second outlet, a second control chamber formed on a side of the shadow poppet that is remote from the second outlet and the second control chamber in fluid communication with the first control chamber; and
a proportional valve;
wherein the main control valve of the first valve assembly couples the pump to the first port of the first hydraulic operator and the shadow valve of the first valve assembly couples the first port of the first hydraulic operator to the first port of the second hydraulic operator, the main control valve of the second valve assembly couples the first port of the first hydraulic operator to the tank and the shadow valve of the second valve assembly couples the second port of the first hydraulic operator to the first port of the second hydraulic operator, the main control valve of the third valve assembly couples the second port of the first hydraulic operator to the tank and the shadow valve of the third valve assembly couples the second port of the first hydraulic operator to the second port of the second hydraulic operator, and the proportional valve couples the pump to the second port of the second hydraulic operator.

US 6,330,799 B1
ADAPTIVE COOLING SYSTEM CONTROL SYSTEM
Probir Chatterjea, 211 Darien La., Sleepy Hollow, Ill. 60118
Filed Jan. 26, 2000, Appl. No. 493,046
Int. Cl. F16D *39/00*
U.S. Cl. 60—456 **26 Claims**



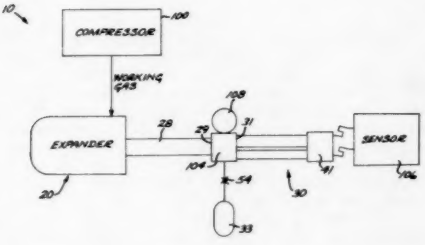
1. An adaptive cooling system control system for controlling fluid delivery from a pump to a fan motor comprising:
an inlet for receiving fluid from a pump;
an outlet for delivering fluid to a fan motor;
a return passage from an outlet of the fan motor;
primary means for controlling the speed of a fan, the primary controlling means comprising a bypass valve including a first passage in fluid communication with the inlet and the outlet, and a bypass passage selectively communicable with the inlet, the bypass passage being placed in fluid communication with the inlet upon receiving fluid from a pump in excess of a predetermined desired quantity of such fluid; and
means for minimizing cavitation of a fan after fluid delivery from a pump ceases, the cavitation minimizing means comprising means for circulating fluid from the return passage into the inlet until the pressure in the return passage falls below a predetermined pressure, the circulating means comprises:
a first check valve having a first rating, an open position and a closed position, the first check valve associated with the return passage and providing a fluid conduit from the return passage to a fluid outlet when in the open position; and
a second check valve having a second rating, an open position and a closed position, the second check valve being associated with the return passage, wherein the second check valve provides a fluid conduit between the return passage and the inlet when in the open position,
the second rating being a pressure higher than the first rating;
whereupon cessation of fluid delivery from a pump, and decrease in flow of fluid in the inlet, the second check valve returns to the closed position, and the first check valve is prompted into the open position, to, in turn, facilitate circula-

tion of fluid from the return passage through the first check valve into the inlet until the pressure within the return passage falls below a predetermined pressure.

US 6,330,800 B1
APPARATUS AND METHOD FOR ACHIEVING TEMPERATURE STABILITY IN A TWO-STAGE CRYOCOOLER

Kenneth D. Price, Long Beach, and Carl S. Kirkconnell, Huntington Beach, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Continuation-in-part of application No. 09/292,028, filed on Apr. 16, 1999, now Pat. No. 6,167,707. This application Jul. 5, 2000, Appl. No. 610,557.
Int. Cl. F25B *9/00*
U.S. Cl. 62—6 **15 Claims**

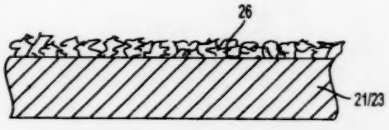


1. A hybrid two-stage cryocooler comprising:
a first-stage Stirling expander having a first-stage interface and a Stirling expander outlet;
a thermal-energy storage device in thermal communication with first-stage interface;
a second-stage pulse tube expander having a pulse tube inlet;
a gas flow path extending between the Stirling expander outlet and the pulse tube inlet; and
a heat exchanger in thermal contact with the gas flow path.

US 6,330,801 B1
METHOD AND SYSTEM FOR INCREASING CRYOPUMP CAPACITY

Francis J. Whelan, 11704 Onion Hollow Run, Austin, Tex. 78739, and Keith E. Reidy, 83 DeBell Dr., Atherton, Calif. 94027

Provisional application No. 60/138,700, filed on Jun. 11, 1999. This application Jun. 12, 2000, Appl. No. 592,181.
Int. Cl. B01D *8/00*
U.S. Cl. 62—55.5 **24 Claims**

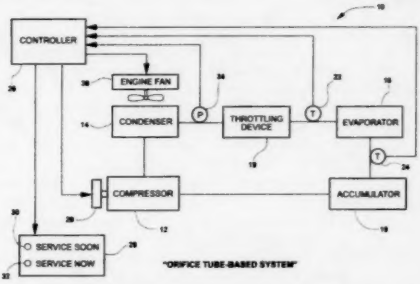


1. A condensing or adsorbing surface for cryopumps comprising a thermally conducting panel and a thermally conductive porous metal or ceramic coating or film applied on at least one surface of the panel to capture and condense gaseous molecules on the panel surface and the surface of the pores.

US 6,330,802 B1
REFRIGERANT LOSS DETECTION

Robert W. Cummings, Bedford, and Thien D. Ta, Saginaw, both of Tex., assignors to Behr Climate Systems, Inc., Forthworth, Tex.

Filed Feb. 22, 2000, Appl. No. 510,703
Int. Cl. F25B *49/02*
U.S. Cl. 62—129 **11 Claims**

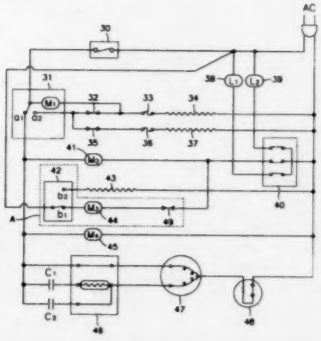


1. A method for detecting a low level of refrigerant circulating through a motor vehicle refrigerant circuit having a compressor (**12**), a condenser (**14**), and an evaporator (**16**), said method comprising the steps of:
detecting a partial loss of a refrigerant fluid by measuring the temperature difference of the refrigerant fluid between an evaporator inlet and an evaporator outlet; and
said method characterized by detecting a complete loss of refrigerant by measuring the pressure of the refrigerant in the liquid phase between the condenser (**14**) and the evaporator (**16**).

US 6,330,803 B1
OPERATION CONTROL APPARATUS FOR A REFRIGERATOR

Kyu-Ho Shin, Kwangju, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Mar. 14, 2000, Appl. No. 525,032
Claims priority, application Rep. of Korea, Dec. 27, 1999, 99-62740
Int. Cl. F25D *17/06*
U.S. Cl. 62—156 **3 Claims**



1. An operation control apparatus for a refrigerator which refrigerator includes (a) a freezing compartment evaporator and a freezing compartment fan motor mounted in a freezing compartment, (b) a refrigerating compartment evaporator and a refrigerating compartment fan motor mounted in a refrigerating compartment, and (c) a freezing compartment temperature regulator for setting a freezing compartment temperature to a predetermined temperature

and for switching power to the freezing compartment fan motor, (d) a refrigerating compartment temperature regulator for setting a refrigerating compartment temperature to a predetermined temperature and for switching power to the refrigerating compartment fan motor, and (e) a compressor, the operation control apparatus wherein:

the freezing compartment temperature regulator is serially connected to the freezing compartment fan motor,

the refrigerating compartment temperature regulator is serially connected to the refrigerating compartment fan motor,

the compressor is serially connected to the freezing compartment temperature regulator for operation only when the freezing compartment regulator switches power to the freezing compartment fan motor,

(a) the serially connected refrigerating compartment temperature regulator and refrigerating compartment fan motor and (b) the serially connected freezing compartment temperature regulator and freezing compartment fan motor are respectively connected in parallel to an input terminal of a power-supply such that independent activations are provided for the freezing compartment fan motor by the freezing compartment temperature regulator and for the refrigerating compartment fan motor by the refrigerating compartment temperature regulator, and

a temperature sensor which senses a temperature of the refrigerating compartment evaporator is connected in series to the refrigerating compartment fan motor to switch power to the refrigerating compartment fan motor when a temperature of the refrigerating compartment evaporator is sufficient for cooling of the refrigerating compartment such that, even when the compressor is not in operation, if the temperature of the refrigerating compartment evaporator is sufficient for cooling of the refrigerating compartment and the refrigerating compartment temperature regulator is switching power to the refrigerating compartment fan motor to provide cooling, the refrigerating compartment fan motor is activated to provide cooling of the refrigerating compartment.

US 6,330,804 B1

REFRIGERATING UNIT

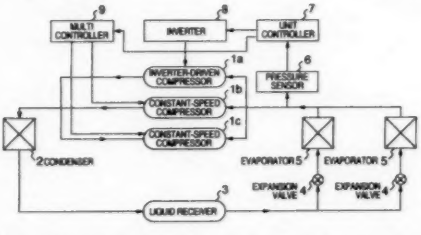
Masaki Uno, and Naoki Hattori, both of Shimizu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 23, 2000, Appl. No. 511,157

Claims priority, application Japan, Mar. 10, 1999, 11-062718

Int. Cl. F25B *1/10*

U.S. Cl. 62—175 **13 Claims**



1. A refrigerating unit having an inverter-driven compressor using a variable driving frequency, and constant-speed compressors using a constant driving frequency, said refrigerating unit comprising:

a pressure sensor installed on the suction side of the inverter-driven compressor and said constant-speed compressors;

means for starting said inverter-driven compressor first, and

means for deciding a driving frequency of said inverter-driven compressor or the number of the constant-speed compressors to operate, based on a suction pressure value detected by said pressure sensor after said inverter driven compressor is started, wherein when said suction pressure value rises above a specified value, one or more of said constant-speed compressors is started regardless of the driving frequency of said inverter-driven compressor.

US 6,330,805 B1

METHOD OF OPERATING A REFRIGERATING UNIT WITH A REFRIGERANT FLUID CIRCUIT

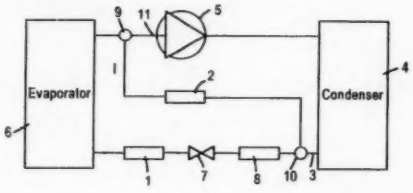
Francois Galian, 83 Avenue du Chateau, 77 340 Pontault Combault, France

Filed Sep. 16, 1998, Appl. No. 154,078

Claims priority, application France, Sep. 16, 1997, 97 11495

Int. Cl. F25B *41/00;49/00*

U.S. Cl. 62—196.1 **6 Claims**



1. A method of operating a refrigerating unit with a refrigerant fluid circuit including a compressor, condenser, primary pressure reducer and evaporator connected in a fluid circuit so during normal operation of the refrigeration unit refrigerant: (1) at an outlet of the evaporator flows to an inlet of the compressor, (2) at an outlet of the compressor flows to an inlet of the condenser, (3) at an outlet of the condenser flows to an inlet of the primary pressure reducer and (4) at an outlet of the primary pressure reducer flows to an inlet of the evaporator, the method comprising shunting saturated high pressure refrigerant gas flowing out of the condenser when ambient temperature where the unit is located exceeds a predetermined value around the evaporator, and combining the reduced pressure shunted refrigerant with refrigerant flowing out of the evaporator before the reduced pressure shunted refrigerant flows into the compressor, and supplying the combined refrigerant to the compressor.

US 6,330,806 B1

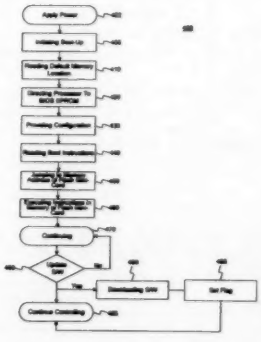
SYSTEM AND METHOD FOR CONTROLLING AN HVAC SYSTEM USING A FLASH MINI-CARD

Gregory K. Beaverson, and Bart A. Smith, both of York, Pa., assignors to York International Corporation, York, Pa.

Filed Mar. 3, 2000, Appl. No. 513,456

Int. Cl. F25D *17/02*

U.S. Cl. 62—201 **42 Claims**



1. A method of controlling a heating, ventilation, and air conditioning (HVAC) system using a HVAC control system, comprising the steps of

applying power to the HVAC control system, wherein said step of applying power initiates a boot-up of a processor associated with the HVAC control system;

reading a default memory location, wherein the contents of the default memory location direct the processor to a Basic Input/Output System (BIOS) connected to the processor through a bus;

configuring the processor associated with the HVAC control system by executing a set of BIOS instructions within the BIOS, wherein after said step of configuring, the processor reads a set of boot instructions that directs the processor to the flash mini-card containing a set of instructions; and

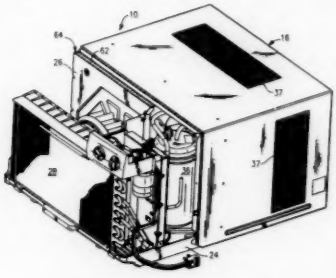
performing at least one of the set of instructions contained within the flash mini-card to control the HVAC system using the HVAC control system.

US 6,330,807 B1

STRUCTURE FOR FACILITATING ASSEMBLY OF AN AIR CONDITIONING UNIT HAVING A REMOVABLE CHASSIS

Juan C. C. Correa, Porto Alegre, Brazil; Nestor Hernandez, Nuevo Leon, Mexico; Peter R. Bushnell, Cazenovia, and Werner Adomeit, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 17, 2000, Appl. No. 641,009
Int. Cl. F25D *23/12*
U.S. Cl. 62—262 **4 Claims**



1. A room air conditioner unit of the type having a chassis configured to be removably received in an outer housing, the chassis including a basepan having an indoor region proximate the front of the basepan and an outer region proximate the back of the basepan, the chassis further including a condenser coil supported in the outdoor region of the basepan, the condenser coil having a support structure including an upper portion overlying the upper end of the condenser coil, the chassis further including a partition supported at its lower end by the basepan and configured to separate the indoor and outdoor regions, the upper end of the partition being configured to be in close proximity to the interior of the outer housing when the chassis is received therein, the outer housing defining a substantially rectangular structure having a lower section configured to receive and support the basepan thereupon, vertically extending side walls extending from left and right edges of the lower section and a top wall extending between the upper ends of the side walls, the walls of the housing being made from a material that has some flexibility, the top wall defining a forward facing edge extending between the side walls and being subject to downward sagging in the region between the side walls, front edges of the lower section and the side wall cooperating with the forward facing edge of the top wall to confine a rectangular open front end through which the chassis is slidably displaced to assemble the air conditioning unit, wherein the improvement comprises:

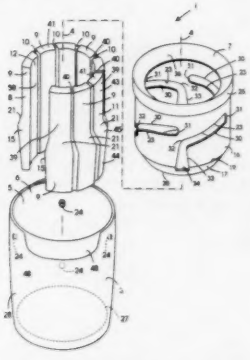
a plurality of guide elements attached to said upper portion of said condenser coil support structure, each of said guide elements being configured to engage a portion of the underside of said forward facing edge of said top wall, and to displace said forward facing edge and said top wall upwardly to assure clearance of said edge and said top wall when said chassis is being slidably inserted through said open front when assembling said air conditioning unit.

US 6,330,808 B1

DEVICE FOR REGULATING THE TEMPERATURE OF A CONTAINER

Tineke C Kouwenberg; Robert J Kouwenberg; Soren Petersen; Michael T Wall, all of County Cork; David L Morgan, County Wicklow, and Cathal Loughnane, County Tipperary, all of Ireland, assignors to Tineke Charlotte Kouwenberg, County Cork, Ireland

PCT No. PCT/IE98/00005, § 371 Date Apr. 10, 2000, § 102(e) Date Apr. 10, 2000, PCT Pub. No. WO98/33421, PCT Pub. Date Aug. 6, 1998
PCT Filed Feb. 3, 1998, Appl. No. 355,747
Claims priority, application Israel, Feb. 4, 1997, 97 0067
Int. Cl. F25D *3/08*
U.S. Cl. 62—372 **41 Claims**



1. A device (**1**,**50**,**70**,**75**,**85**) for regulating the temperature of the contents of a container (**2**), the device comprising a support means (**3**,**51**,**76**), and a temperature regulating means (**8**,**55**,**79**) located within the support means (**3**,**51**,**76**) for regulating the temperature of the contents of the container (**2**) at a desired temperature, the temperature regulating means (**8**,**55**,**79**) comprising a storing means (**14**) for storing a temperature conditionable fluid and defining an elongated receiving compartment (**12**) for receiving the container (**2**), the receiving compartment (**12**) being of variable transverse cross-sectional area for accommodating containers (**2**) of different cross-sectional area, characterised in that the support means (**3**,**51**,**76**) comprises a first part (**3**,**51**,**76**) and a second part (**7**,**54**) which are moveable relative to each other, the second part (**7**,**54**) of the support means (**3**,**51**,**76**) being co-operable with the temperature regulating means (**8**,**55**,**79**) so that relative movement of the first and second parts (**3**,**51**,**76**) (**7**,**54**) varies the transverse cross-sectional area of the receiving compartment (**12**).

US 6,330,809 B1

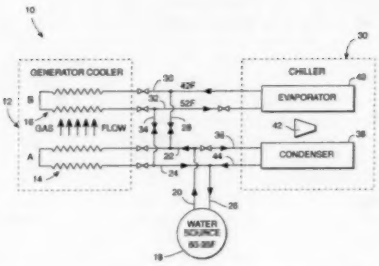
APPLICATION OF A CHILLER IN AN APPARATUS FOR COOLING A GENERATOR/MOTOR

William Hunter Boardman, IV, Burnt Hills; Dewey Reed Bosley, Ballston Lake, both of N.Y., and Edward Paul Sapiro, Chesapeake, Va., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 8, 2000, Appl. No. 726,541
Int. Cl. F25D *17/02*
U.S. Cl. 62—434 **20 Claims**

1. A generator/motor cooling apparatus comprising:

a cooler for cooling gas used to cool the generator/motor, the gas flowing serially across first and second heat exchangers that are supplied with water from an ambient source; and



a chiller having an evaporator and a condenser with a closed refrigerant circuit between the evaporator and condenser;

wherein water supplied to the second heat exchanger is chilled in the evaporator and returned to the second heat exchanger.

US 6,330,810 B1

CONDENSING APPARATUS FOR USE IN A REFRIGERATION CYCLE RECEIVER-DRYER USED FOR SAID CONDENSING APPARATUS

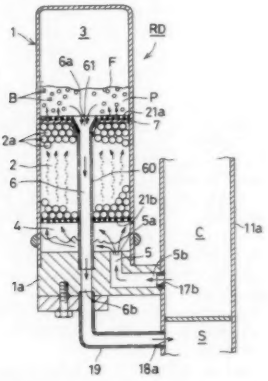
Keiji Yamazaki, Tochigi; Yoshihiko Seno; Osamu Kamoshida, both of Oyama, and Yasuhiro Takahashi, Tochigi, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Nov. 20, 2000, Appl. No. 716,397

Claims priority, application Japan, Aug. 11, 2000, 12-244199

Int. Cl. F25B *43/00*

U.S. Cl. 62—509 **20 Claims**



1. A condensing apparatus, comprising:

a condenser having a condensing portion for condensing a gaseous refrigerant; and

a receiver-dryer which receives a condensed refrigerant condensed by said condensing portion, separates the condensed refrigerant into a gaseous refrigerant and a liquefied refrigerant, and removes moisture contained in the condensed refrigerant,

wherein said receiver-dryer includes:

a tank main body;

a desiccant-filled-portion arranged so that an upper space is formed in said tank main body at an upper part thereof;

a refrigerant-introducing-passage for introducing the condensed refrigerant into said tank main body from said condenser; and

a refrigerant-discharging-passage for discharging the liquefied refrigerant in said tank main body,

wherein said refrigerant-introducing-passage has an outlet which opens toward an inner bottom side of said tank main body,

wherein said refrigerant-discharging-passage penetrates said desiccant-filled-portion and has an inlet formed so as to open toward said upper space at an upper end of said desiccant-filled-portion and an outlet formed at a bottom portion of said tank main body,

whereby the condensed refrigerant is introduced into an inner bottom of said tank main body through said outlet of said refrigerant-introducing-passage from said condensing portion, and passes through said desiccant-filled-portion upward to be accumulated in said upper space, and the accumulated liquefied refrigerant is introduced into said inlet of said refrigerant-discharging-passage and flows out of said tank main body via said outlet.

US 6,330,811 B1

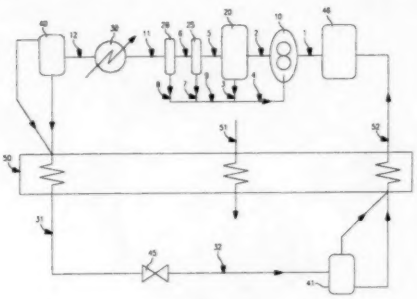
COMPRESSION SYSTEM FOR CRYOGENIC REFRIGERATION WITH MULTICOMPONENT REFRIGERANT

Bayram Arman, and Dante Patrick Bonaquist, both of Grand Island, N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 29, 2000, Appl. No. 606,088

Int. Cl. F25J *1/02*

U.S. Cl. 62—643 **10 Claims**



1. In a method for providing refrigeration wherein a refrigerant fluid is compressed, expanded to generate refrigeration, and then warmed to provide refrigeration to a refrigeration receptor, the improvement comprising:

(A) employing a multicomponent refrigerant as the refrigerant fluid;

(B) compressing the multicomponent refrigerant using a compressor which is lubricated using a polyalphaolefin-based oil; and

(C) providing the refrigeration at a temperature less than 220K, and wherein polyalphaolefin-based oil is separated from the compressed multicomponent refrigerant before the multicomponent refrigerant is expanded, and the separated oil is then passed to the compressor.

US 6,330,812 B2

METHOD AND APPARATUS FOR PRODUCING NITROGEN FROM AIR BY CRYOGENIC DISTILLATION

Robert Anthony Mostello, 165 Rehill Ave., Somerville, N.J. 08876

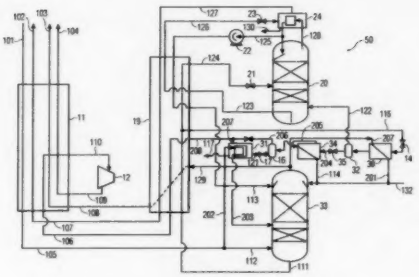
Provisional application No. 60/186,572, filed on Mar. 2, 2000. This application Feb. 1, 2001, Appl. No. 775,362.

Int. Cl. F25J *3/04*

U.S. Cl. 62—643 **15 Claims**

1. A process for the distillation of air consisting of two distillation columns, a high pressure column and a low pressure column, where:

a. the bottoms liquid product of the high pressure column is divided into a first part which feeds the low pressure column; and a second part which serves as coolant for condensing at



least one vapor stream from the high pressure column which is returned to the high pressure column as a reflux stream

b. the vaporization of said coolant takes place serially in at least two coolant vaporization stages each of which condenses vapor

c. the composition of said coolant becomes richer in its higher boiling components as said coolant vaporizes in subsequent stages

d. the vaporized coolant from the last stage of vaporization does not re-enter the distillation column process, and

e. all of said vaporized coolant from the initial stage of vaporization enters the low pressure distillation column

f. at least one coolant vaporization stage is used to condense nitrogen overhead vapor from the high pressure column.

US 6,330,813 B2

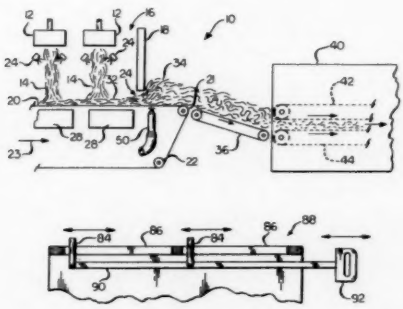
BLOWER WITH ORIFICE CLEARING MEMBER FOR LIFTING INSULATION PACK

Mayur M. Patel, Columbus, and Timothy A. Walsh, Newark, both of Ohio, assignors to Owens Corning Fiberglas Technology, Inc., Summit, Ill.

Division of application No. 09/425,391, filed on Oct. 22, 1999, now Pat. No. 6,244,075. This application Feb. 21, 2001, Appl. No. 790,074.

Int. Cl. F27B *1/26*

U.S. Cl. 65—483 **3 Claims**



1. Apparatus for manufacturing fibrous insulation comprising a porous conveyor mounted for transporting fibrous material in a machine direction in the form of pack, and a pack lift blower oriented in a direction transverse to the machine direction and positioned beneath the porous conveyor to direct gases upwardly through the porous conveyor to fluff the fibers with the pack, wherein the pack lift blower has a nozzle including at least one elongated slot, and further including movable members positioned within the slots and mounted for reciprocation along the length of the slots to maintain the slots in an open condition.

US 6,330,814 B1

CIRCULAR KNITTED FABRIC AND METHOD FOR FORMING ARTICLE FROM THE SAME

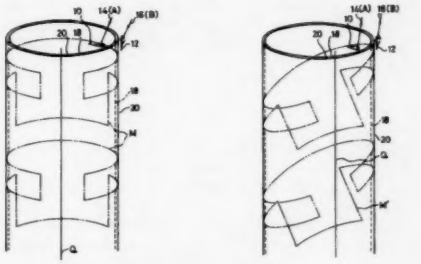
Toshio Fujiwara, Tokyo, Japan, assignor to Kabushiki Kaisha Miyake Design Jimusho, Tokyo, Japan

Filed Jul. 14, 2000, Appl. No. 616,662

Claims priority, application Japan, Oct. 4, 1999, 11-283001

Int. Cl. D04B *9/42*

U.S. Cl. 66—8 **2 Claims**



1. A circular knitted fabric for cutting therefrom garments, said fabric comprising:

an inner and an outer knitted layers which are, basically, separate from each other, the inner knitted layer being for a front body of the garment while the outer knitted layer being for the back body of the garment; and

stitching parts by which the inner and outer layers are stitched along a contour line of a garment so that the garments are integrated to the fabric;

said contour lines of articles as repeated patterns being distributed along substantially entire length and the width of the fabric, which, by cutting, allows the garment to be separated from the fabric, while the opposite sides of the article are connected with each other along the contour line;

the arrangement of the repeated patterns is such that the axis of the patterns are inclined with respect to the axis of the circular knitted fabric such that the stitched parts which become opening of the article are run, as long as possible, along the direction inclined with respect to a course of the knitted fabric.

US 6,330,815 B1

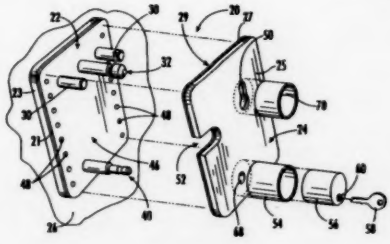
APPARATUS AND METHOD FOR SECURELY MOUNTING A FIREARM TO A SUPPORT STRUCTURE

Steven P. Duncan, Gastonia, N.C., assignor to Tactical Solutions, Inc., Gastonia, N.C.

Filed Aug. 11, 1999, Appl. No. 373,015

Int. Cl. E05B *59/00*

U.S. Cl. 70—58 **34 Claims**



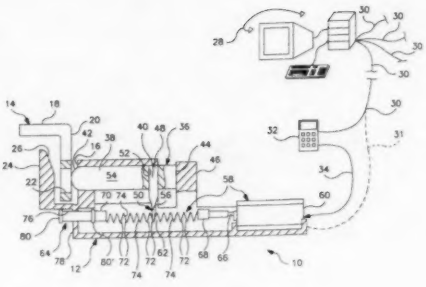
1. An apparatus for securing a firearm having operational elements, comprising:

a support structure;

at least one elongate member integral with and extending away from said support structure;

a cover member having an opening through which one of said at least one elongate member extends in generally orthogonal relation to said support structure, said cover member shaped to cover the operational elements of the firearm; and

a locking device separate from said cover member and releasably attached to said elongate member extending through said opening in said cover member such that said locking device engages an outer surface of said cover member and maintains said cover member in overlapping relation to said support structure for retention of the firearm when the firearm is disposed between said cover member and said support structure.



US 6,330,816 B1

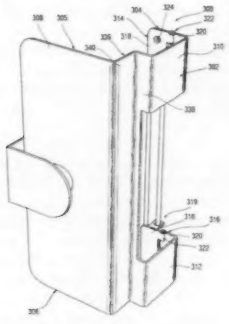
LOCK BOX MOUNTING BRACKET

David C. O'Connor, Falls Church, Va., assignor to SOCO, Inc., Falls Church, Va.

Continuation-in-part of application No. 09/237,858, filed on Jan. 27, 1999, now abandoned. This application Dec. 30, 1999, Appl. No. 475,253.

Int. Cl. E05G *1/00*

U.S. Cl. 70—63 **39 Claims**



1. A lock box mounting bracket for mounting on a hinge-edge of a door mounted on a hinge and movable between open and closed positions, the door having an interior side facing an interior space and an exterior side facing an exterior space when the door is in the closed position, the lock box mounting bracket comprising:

a bracket body shaped for mounting on the hinge-edge of the door, said bracket body including an exterior portion for supporting a lock box, said exterior portion positioned in the exterior space when the lock box mounting bracket is mounted on the door; and

a bracket locking means formed on said bracket body and positioned in the interior space when said bracket body is mounted on the door for permitting secure locking of said bracket body to the door hinge and preventing unauthorized removal of the lock box mounting bracket when the door is in both the open and closed positions.

US 6,330,817 B1

ANTI-JAM LOCKING MECHANISM FOR ELECTRONIC SECURITY SYSTEM

George Frolov, Farmington, Conn., assignor to Harrow Products, Inc., Woodcliff Lake, N.J.

Filed Feb. 1, 2000, Appl. No. 495,497

Int. Cl. E05B *47/00*

U.S. Cl. 70—280 **20 Claims**

1. A locking mechanism comprising:

a frame assembly;

a locking pin mounted to said frame assembly for reciprocating between a retracted position and an extended position;

a drive link extending from said locking pin;

a motor for rotatably driving a drive shaft;

a spring shaft having a first end and a second end, the first end being engageable with said drive shaft;

a coupling connecting the second end of said spring shaft and said frame assembly; and

wherein said drive link is configured to engage individual coil surfaces of said spring shaft during rotation thereof whereby said locking pin is resiliently urged towards the retracted or extended position.

US 6,330,818 B1

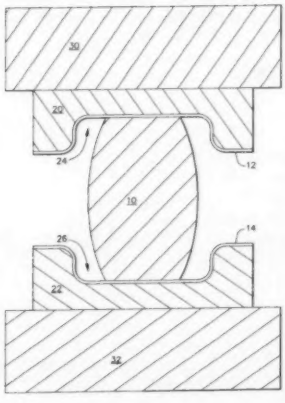
LUBRICATION SYSTEM FOR METALFORMING

Sulekh Chand Jain, Sugar Land, Tex., assignor to Materials and Manufacturing Technologies Solutions Company, Montgomery, Ohio

Continuation-in-part of application No. 09/213,552, filed on Dec. 17, 1998, now abandoned. This application Jun. 16, 2000, Appl. No. 596,538.

Int. Cl. B21J *3/00*

U.S. Cl. 72—42 **20 Claims**



1. A system for providing lubrication in a metalforming operation, comprising:

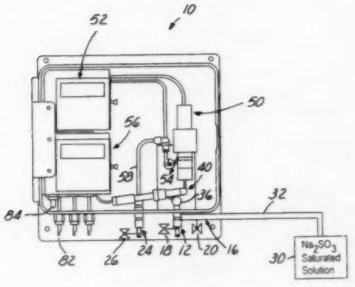
lubricant particles, each particle comprising a particle of lubricating substance substantially completely covered by a protective layer of a substance that is a poor conductor of electricity, said protective layer being applied to said lubricant particles by an encapsulation process; and

electrostatic deposition means for applying said lubricant particles to working surfaces of tooling employed in said metalforming operation;

wherein said lubricant particles comprise a range of sizes extending from about one micron to about 500 microns; and

wherein said protective layer is sufficiently thick and sufficiently complete to maintain an electrostatic charge on each particle during electrostatic deposition of said lubrication particles on said working surfaces.

US 6,330,819 B1
METHOD AND APPARATUS FOR CALIBRATING A DISSOLVED OXYGEN ANALYZER
Feng-Yi Yang, Taipei, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Ltd, Hsin Chu, Taiwan
Filed Oct. 5, 1999, Appl. No. 412,208
Int. Cl. G01N *27/26*
U.S. Cl. 73—1.03 **10 Claims**



1. A method for calibrating a dissolved oxygen analyzer comprising the steps of:

setting a zero point on the analyzer by filling said analyzer with a saturated aqueous solution of an oxidizer that contains 0 ppb oxygen,

setting a span point on the analyzer by first filling a sample solution in said analyzer and then flowing a cell current through a Faraday electrode until a quantity of oxygen that is not more than 10 ppb higher than an estimated oxygen content of the sample solution is obtained, and

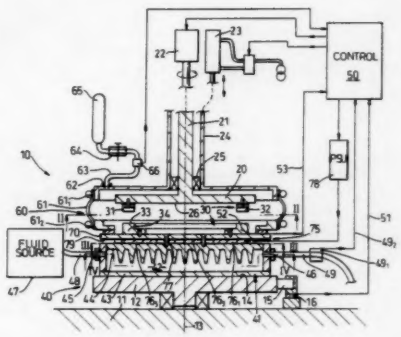
calculating a slope from said zero point and said span point.

US 6,330,820 B1
FRICTION MATERIAL TESTING APPARATUS
Ronald I Cotterill; Kenneth Dunning, both of Chapel-en-le-Frith; James B Marshall, Dronfield, and Alan Davenport, Chapel-en-le-Frith, all of United Kingdom, assignors to Federal-Mogul Friction Products Limited, Manchester, United Kingdom
PCT No. PCT/GB99/00159, § 371 Date Jul. 17, 2000, § 102(e) Date Jul. 17, 2000, PCT Pub. No. WO99/37993, PCT Pub. Date Jul. 29, 1999
PCT Filed Jan. 18, 1999, Appl. No. 600,459
Claims priority, application United Kingdom, Jan. 22, 1998, 9801217
Int. Cl. G01N *3/56;* **G01L** *5/28*
U.S. Cl. 73—9 **20 Claims**

1. Apparatus for testing the frictional behaviour of dry friction material in a friction couple with a relatively moving rubbing surface against which it is pressed repeatedly, comprising:

(i) an element carrier arranged to support a rubbing element of thermally conducted material, having a said rubbing surface, said element carrier being movable in the plane of the rubbing surface,

(ii) a sample carrier for at least one sample of said friction material, disposed facing said element carrier, one of said element and sample carriers comprising a table that is rotatable within limits of constraint and the other one of said carriers being rotatable with respect to the table,



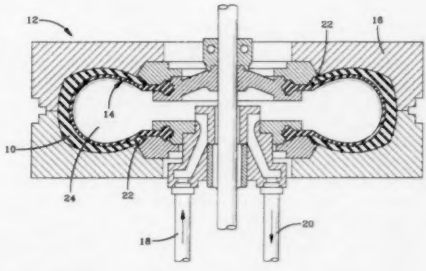
(iii) carrier drive means arranged to move said other one of the carriers and the friction couple component thereon orthogonal and parallel with respect to said table and the friction couple component thereon to make and break rubbing contact between the rubbing surface and each contacting sample,

(iv) measuring means operable to sense the temperature of the rubbing element and, in response to friction between the rubbing surface and friction material, to limit rotation of the table and measure the force applied to said table by way of the rubbing element.

(v) control means operable to control the carrier drive means to effect frictional coupling in response to the temperature of the rubbing element being below a predetermined trigger temperature, and

(vi) cooling means operable to extract heat forcibly from the rubbing element to reduce it to said predetermined trigger temperature.

US 6,330,821 B1
METHOD OF DETECTING EXPANSION VESSEL LEAKAGE
William Allen Arnold, Coventry, and Joseph Alan Incavo, Green, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 14, 2000, Appl. No. 503,029
Int. Cl. G01M *3/04;3/26;* **B29C** *35/04*
U.S. Cl. 73—40 **3 Claims**



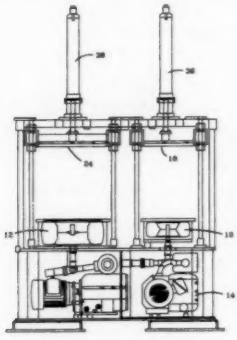
1. A method for detecting leakage of an expansion vessel (**14**), the expansion vessel in an inflated form occupying or having occupied at least a portion of a cavity of an elastomeric article, the method including the step of

(i) adding a tracer gas to a pressurized fluid, the pressurized fluid being used to inflate the expansion vessel against an atmosphere enclosed by said article cavity (**14**), the tracer gas being added prior to the expansion vessel's (**14**) withdrawal from the cavity,

the method being characterized by the step of

(ii) examining the atmosphere within the cavity (**24**) of the elastomeric article, but not within the expansion vessel (**14**), for evidence indicating that a portion of the tracer gas has escaped from the expansion vessel (**14**).

US 6,330,822 B1
TIRE TESTING APPARATUS AND METHOD
Homer J. Hawk, Racine, Wis.; Thomas Setele, Parma, and Craig Brookhart, Lakewood, both of Ohio, assignors to MTD Products Inc, Cleveland, Ohio
Provisional application No. 60/096,128, filed on Aug. 10, 1998. This application Dec. 30, 1998, Appl. No. 223,293.
Int. Cl. G01M *3/04*
U.S. Cl. 73—40.7 **9 Claims**



1. A tire testing method for detecting leaks in associated tires, the tire testing method comprising the steps of:

providing a tire inflator assembly, said tire inflator assembly comprising at least two rigid vacuum chambers having two different fixed volumes for holding different sized tires, a leak detector, and a robotic arm;

heating the associated tire;

using said tire inflator assembly to inflate the associated tire with a mixture of helium air, the mixture being 90% air and 10% commercial grade helium by volume;

placing the associated tire into a vacuum chamber with said robotic arm, said robotic arm having pincer-like extensions;

sealing the vacuum chamber with a chamber top;

evacuating the air from the vacuum chamber down to less than 50 torr with a roughing pump;

evacuating the air from the vacuum chamber down to 5.0 to 600 millitorr with a hi-vac pump;

detecting the amount of helium that leaked into the vacuum chamber from the associated tire using a spectrometer; and,

sorting the tire into a first or second area depending on whether or not the tire leaks, wherein the steps of placing the associated tire into a vacuum chamber with said robotic arm to the step of detecting the amount of helium that leaked into the vacuum chamber from the associated tire using a spectrometer has a cycle time of approximately thirteen seconds.

US 6,330,823 B1
PROCESS AND APPARATUS FOR TESTING CONTAINERS
Samuel O. Raymond, Rockport, Mass., assignor to Benthos, Inc., North Falmouth, Mass.
Filed Jan. 13, 1998, Appl. No. 6,369
Int. Cl. G01M *3/32*; **F16J** *12/00*
U.S. Cl. 73—52 **11 Claims**

1. A process for testing the fluid tightness of a plastic container, the plastic container comprising a container body at least partially filled with a fluid and having a flexible base, and walls defining an aperture in the container body, the plastic container further comprising a flexible lid secured to the container body so as to substantially close the aperture therein, the flexible lid being spaced opposite from the flexible base of the container body, the process comprising the steps of:

(a) providing a support member having a support surface and at least one aperture extending from an entrance on said support surface through said support member, and providing a sealing member surrounding said entrance;

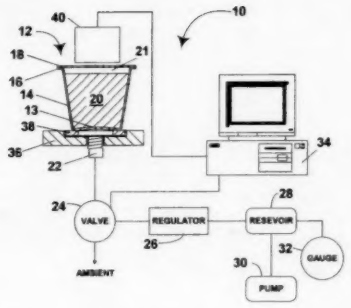
(b) providing pressure varying means for varying the pressure in said aperture between substantially atmospheric pressure and a sub-atmospheric pressure;

(c) while the pressure within said aperture is at substantially atmospheric pressure, placing the container on the support member so that a peripheral portion of the flexible base of the container engages the sealing member to form a chamber defined by a predetermined portion of the base of said container and said sealing member, said chamber being in communication with said aperture, but so that the flexible lid is free to move in response to pressure changes within the container;

(d) while the pressure within said aperture and said chamber is still at substantially atmospheric pressure, monitoring a characteristic of a sampling area of the flexible lid with an area detector, said sampling area having finite dimensions such that the signal from said area detector represents the behavior of said flexible lid integrated over said sampling area;

(e) thereafter causing said pressure varying means to change the pressure in said aperture and said chamber to said sub-atmospheric pressure without changing the pressure applied to the outer surface of the flexible lid, thereby causing a deformation of the flexible base and thus a reduction in the pressure within the plastic container; and

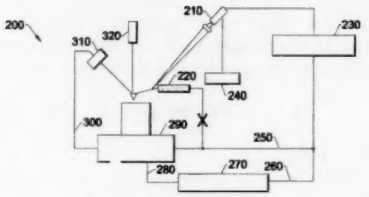
(f) repeating said monitoring of said characteristic of said sampling area of the flexible lid at at least one time later than that at which step (e) is carried out.



US 6,330,824 B1
PHOTOTHERMAL MODULATION FOR OSCILLATING MODE ATOMIC FORCE MICROSCOPY IN SOLUTION
Dorothy A. Erie, Pittsboro; Glenn Ratcliff, Mebane, and Richard Superfine, Chapel Hill, all of N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.
Provisional application No. 60/120,821, filed on Feb. 19, 1999. This application Feb. 18, 2000, Appl. No. 506,617.
Int. Cl. G01B *5/28*; **H01J** *37/252*
U.S. Cl. 73—105 **20 Claims**

1. A method of imaging a sample present in a solution, said method comprising:

providing a microscope having a cantilever that is under the solution, wherein the cantilever includes a base and a decay length;



contacting the cantilever with photothermal energy at a point on the cantilever which is present in solution to cause the cantilever to bend and vibrate, the center of the impinging photothermal energy being positioned at a distance from the cantilever base of from 1 to 2.5 times the decay length of the cantilever; and

detecting the amplitude of vibration of the cantilever from the photothermal energy;

wherein the cantilever has at least one coating present thereon to absorb the photothermal energy such that the cantilever bends and vibrates at a resonance frequency.

US 6,330,825 B1

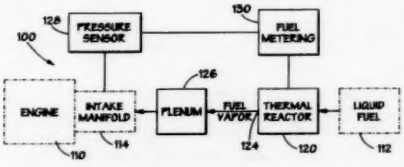
INTERNAL COMBUSTION ENGINE FUEL MANAGEMENT SYSTEM

Henry Harness, 2910 Whispering Oaks, #11, Pearland, Tex. 77581, and Harry Harness, 11711 Memorial Dr., #649, Houston, Tex. 77024

Provisional application No. 60/063,183, filed on Oct. 20, 1997. This application Oct. 20, 1998, Appl. No. 176,011.

Int. Cl. G01M *19/00*

U.S. Cl. 73—118.1 **30 Claims**



1. A fuel management system for an internal combustion engine including an intake manifold, the fuel management system comprising:

a thermal reactor having an inlet port and an outlet port, the thermal reactor receiving liquid fuel through the inlet port, the thermal reactor heating the liquid fuel to convert the liquid fuel to a fuel vapor and discharge the fuel vapor through the outlet port;

a pressure sensing device for measuring pressure within the intake manifold to determine engine load;

a plenum connected to the outlet port to receive the fuel vapor from the outlet port and mix the fuel vapor with air;

a fuel metering device connected to the pressure sensing device for regulating the fuel vapor provided to the plenum in response to the pressure sensing device; and

an air intake velocity valve connected to the plenum, the air intake velocity valve controlling the air provided to the plenum in response to the pressure sensing device.

US 6,330,826 B1

DYNAMIC SAG MONITOR FOR DRILLING FLUIDS

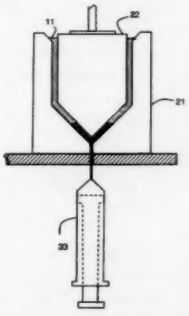
Gerald H. Meeten, Ware, United Kingdom, assignor to Schlumberger Technology Corporation

Filed Feb. 8, 2000, Appl. No. 499,988

Claims priority, application United Kingdom, Feb. 15, 1999, 9903205

Int. Cl. F04B *51/00;* **G01N** *11/14*

U.S. Cl. 73—152.62 **17 Claims**



1. An apparatus for measuring the sag properties of a drilling fluid comprising:

a conically or frustro-conically shaped inner body and an outer body having an opening, said opening having a contour closely matching the contour of the inner body such that, in conjunction, inner and outer body are separated by a narrow gap defining a conically or frustro-conically shaped volume with a vertex at one end;

a motor drive adapted to exert a shear force on fluid in said volume; and

a sampling point, permanently located in the vicinity of said vertex, for extracting a sample of mud of said gap and to determine sedimentation of said drilling fluid within a localized part of said volume.

US 6,330,827 B1

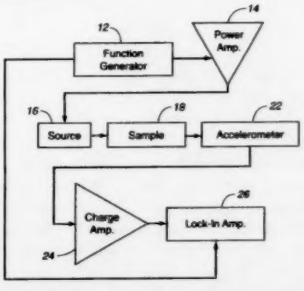
RESONANT NONLINEAR ULTRASOUND SPECTROSCOPY

Paul A. Johnson, Santa Fe; James A. TenCate, Los Alamos, both of N. Mex.; Robert A. Guyer, Amherst, Mass., and Koen E. A. Van Den Abeele, Sint-Niklaas, Belgium, assignors to The Regents of the University of California, Los Alamos, N. Mex.

Provisional application No. 60/110,961, filed on Dec. 4, 1998. This application Nov. 19, 1999, Appl. No. 444,219.

Int. Cl. G01H *13/00*

U.S. Cl. 73—579 **2 Claims**



1. A method for identifying components with defects using strains applied at acoustic and ultrasound frequencies, comprising the steps of:

a. determining the relative resonance frequency shift $|\Delta f/f_0|$ as a function of applied strain for an acceptable component, where f_0 is the frequency of the resonance peak at the lowest amplitude of applied strain and Δf is the frequency shift of the resonance peak as strain amplitude is increased to determine a reference relationship;

b. determining the relative resonance frequency shift $|\Delta f/f_0|$ as a function of applied strain for a component under test, where f_0 is the frequency of the resonance peak at the lowest amplitude of applied strain and Δf is the frequency shift of the resonance peak as strain amplitude is increased to determine a quality test relationship; and

c. comparing the reference relationship with the quality test relationship to determine the presence of defects in the component under test.

US 6,330,828 B1

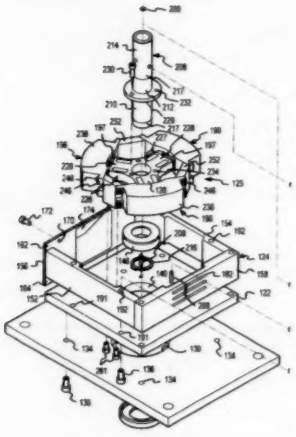
METHOD AND APPARATUS FOR SUBJECTING A DEVICE TO ROTATIONAL VIBRATION

Alan Thomas Nagl, and John Jay Freeman, both of Longmont, Colo., assignors to Seagate Technology LLC, Scotts Valley, Calif.

Provisional application No. 60/130,284, filed on Apr. 21, 1999. This application Apr. 11, 2000, Appl. No. 547,064.

Int. Cl. B06B *3/00*

U.S. Cl. 73—668 **18 Claims**



1. An apparatus for subjecting a device to rotational vibrations, the apparatus comprising:

a support structure operably supporting a shaft having a central axis;

a voice coil motor assembly fastened to the support structure and having an armature operatively connected to the shaft for reciprocally rotating the shaft about its central axis;

a mounting platform attached to one end of the shaft adapted to receive and hold a device to be subjected to rotational vibrations; and

a controller connected to the voice coil motor assembly for operating the voice coil motor assembly to reciprocally rotate the shaft about the central axis thereby subjecting a device mounted on the platform to rotational vibrations.

US 6,330,829 B1

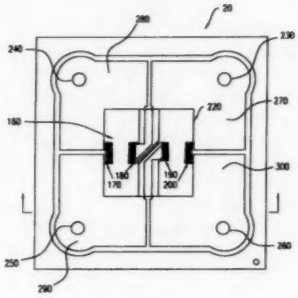
OIL-FILLED PRESSURE TRANSDUCER

Anthony D. Kurtz, Ridgewood, and Robert Gardner, Westwood, both of N.J., assignors to Kulite Semiconductor Products Inc.

Filed Mar. 16, 2000, Appl. No. 526,940

Int. Cl. G01L *9/00*

U.S. Cl. 73—717 **17 Claims**



1. An oil-filled differential pressure transducer comprising:

a housing including a first end containing a first recess, an oppositely disposed second end containing a second recess, and first and second isolation diaphragms respectively enclosing said first and second recesses and forming in conjunction therewith first and second oil-filled cavities;

first and second headers secured within said housing and being electrically coupled together, said first header including a plurality of pins and a central aperture opening there through; and,

a dielectrically isolated, lead-less sensor mounted to said first header, said sensor including:

a sculptured silicon wafer including first and second surfaces and a deflectable diaphragm;

a P+ region formed on said first surface of said silicon wafer and including a plurality of serpentine resistors formed into a Wheatstone Bridge on the deflectable diaphragm, a group of large contact areas leading from the Wheatstone Bridge, and a rim surrounding and electrically isolated from the contact areas; and,

a first glass wafer sealed to at least part of said P+ region, said first glass wafer including a central channel and a plurality of apertures opening there through, each of said apertures being filled with a glass-metal frit adapted to make electrical contact to an associated one of said contact areas and a corresponding one of said pins of said first header;

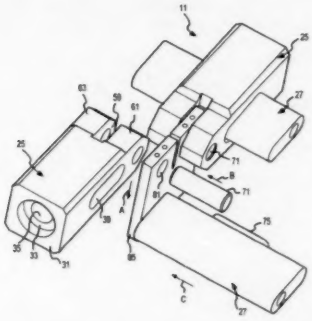
whereby, a first pressure applied to said first diaphragm is communicated to said sensor through said first oil-filled cavity, central aperture of said first header and central channel of said first glass wafer, and a second pressure applied to said second diaphragm is communicated to said sensor through said second oil-filled cavity, such that said first and second pressures are applied to opposite sides of the sensor, and a resulting deflection of said diaphragm is indicative of a difference between said first and second pressures.

US 6,330,830 B1

TENSION/COMPRESSION FATIGUE CRACKING GRIPS

David Lynn Sandoval, P.O. Box 441, Truchas, N. Mex. 87578, and Loren A. Jacobson, 7416 Old Santa Fe Trail, Santa Fe, N. Mex. 87505

Filed Aug. 3, 1999, Appl. No. 366,089
Int. Cl. G01N *3/02*
U.S. Cl. 73—856 **5 Claims**



1. A grip for holding a specimen, said specimen including a through opening for receiving a pin and an edge, said grip comprising:

a. a pin;

b. a Davis adjustable key, said Davis adjustable key including a key housing, a movable key portion and means to move said key portion relative to said key housing; and

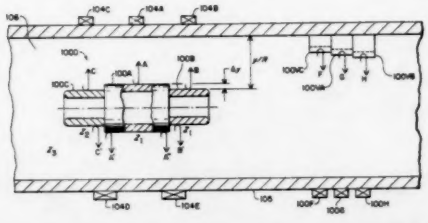
c. a housing, said housing including a bore for receiving said Davis adjustable key, a bore for receiving said pin, and a slot for receiving that portion of said specimen which includes said through opening and said edge, said Davis adjustable key bore and said pin bore being substantially parallel to each other, said slot being substantially perpendicular to and completely bisecting said pin bore, said slot also partially intersecting said Davis adjustable key bore, when said specimen is received in said slot, said pin received in said through opening and said pin bore, and said Davis adjustable key is received in said Davis adjustable key bore, said moveable key portion being moveable into engagement with said edge.

US 6,330,831 B1

STREAM-CLEANED DIFFERENTIAL REFLECTION COEFFICIENT SENSOR

Lawrence C. Lynnworth, Waltham, and Yi Liu, Bolton, both of Mass., assignors to Panametrics, Inc., Waltham, Mass.

Provisional application No. 60/104,913, filed on Oct. 20, 1998. This application Oct. 18, 1999, Appl. No. 420,453.
Int. Cl. G01F *1/66*
U.S. Cl. 73—861.28 **16 Claims**



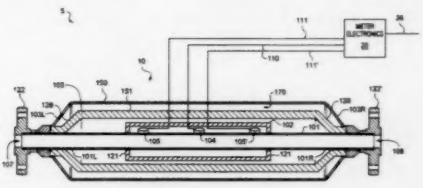
1. A sensing system for determining a physical property of a fluid, wherein the system performs measurements of an ultrasonic signal propagated through the fluid to a reflector in the fluid and includes at least one differential impedance fluid reflection path measurement wherein the ultrasonic signal propagates along a differential path in said fluid effective to determine a value of fluid impedance locally at the reflector.

US 6,330,832 B1

CORIOLIS FLOWMETER HAVING A CASING ENCLOSED IN A VENEER

David F. Normen, Louisville, and Michael Leon Overfeldt, Longmont, both of Colo., assignors to Micro Motion, Inc., Boulder, Colo.

Filed Jun. 30, 1999, Appl. No. 345,085
Int. Cl. G01F *1/84*
U.S. Cl. 73—861.357 **25 Claims**



1. An apparatus for enclosing a flow tube of a device for measuring properties of a material flowing through said flow tube, said apparatus comprising:

a casing substantially enclosing said flow tube from an inlet end to an outlet end of said flow tube; and

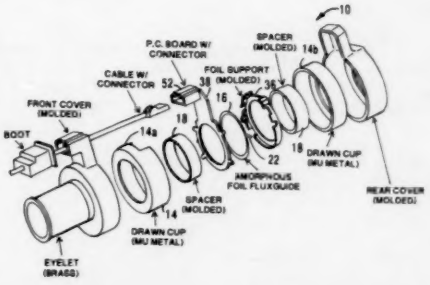
a veneer affixed to opposing ends of an outer surface of said casing to enclose said outer surface of said casing to provide a sanitary surface for said casing.

US 6,330,833 B1

MAGNETOELASTIC TORQUE SENSOR

John E. Opie, Stony Creek, and Brian Kilmartin, Cheshire, both of Conn., assignors to Mannesmann VDO AG, Frankfurt, Germany

Continuation-in-part of application No. 08/829,125, filed on Mar. 28, 1997, now abandoned. This application Dec. 31, 1998, Appl. No. 224,598.
Int. Cl. G01L *3/02*
U.S. Cl. 73—862.333 **21 Claims**



1. A magnetoelastic sensor for sensing a torque applied to a member, said sensor comprising:

a magnetoelastic element disposed on and encircling said member, said member extending longitudinally about an axis, said magnetoelastic element having a magnetic polarization providing a permanent magnetic field, said magnetic field being in a direction transverse to said axis in the absence of a torque applied to said member, the direction of said magnetic field

being altered by a non-zero value of the torque to provide an axially directed component thereof;

a magnetic circuit element comprising an outer flux guide encircling said magnetoelastic element and extending in an axial direction relative to the magnetoelastic element at a first end region and at a second end region of the magnetoelastic element, and an inner flux guide being spaced apart from said magnetoelastic element and having an annular shaped ring portion for encircling said member, at least one coil core extending from the inner flux guide to the outer flux guide, said magnetic circuit element providing a magnetic path to an axial component of said permanent magnetic field produced by said magnetoelastic element in response to a non-zero value of said torque;

magnetic field sensing means, including a coil encircling said at least one coil core, and disposed within said magnetic path for providing an output signal in response to said axial component of the magnetic field; and

the inner flux guide and the at least one coil core are constructed of a unitary piece of magnetically conductive foil, a cross-sectional area of said ring portion being larger than a cross-sectional area of said at least one coil core to produce a magnetic saturation of said at least one coil core without saturating said ring portion.

US 6,330,834 B1

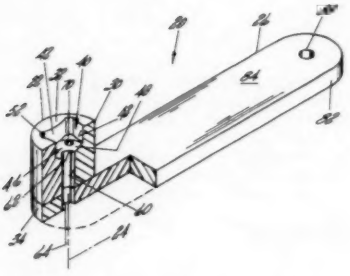
LIQUID SAMPLING TOOL

Gregg H. Weitzman, 4434 Calle Real, Santa Barbara, Calif. 93111

Provisional application No. 60/117,330, filed on Jan. 22, 1999. This application Mar. 2, 1999, Appl. No. 260,918.

Int. Cl. G01N *1/10*

U.S. Cl. 73—863.71 **10 Claims**



1. A liquid sampling tool for opening a valve of a tank containing a liquid and allowing a sample of the liquid to flow by gravity through the valve into a container below the tank, comprising:

a cylindrical head having a longitudinal axis and upper and lower end portions respectively terminating in radial upper and lower end surfaces,

the upper end portion providing an axially extending wrench socket that opens endwardly of the upper end portion at the upper end surface and is circumscribed by axially extending side walls defining a plurality of junctures where adjacent side walls meet,

the socket being further defined by an inner base wall spaced axially downwardly from the end surface and extending transversely of the head,

the base wall including a concentric concave central depression forming a sump and a plurality of lateral ledges individually extending from the depression to said junctures,

the head having a concentric main bore extending axially of the head from the depression to the lower end surface, and

the head also having a plurality of auxiliary bores extending axially of the head from the depression and individually adjacent to the ledges to the lower end surface; and

a handle extending radially from the lower end portion of the head.

US 6,330,835 B1

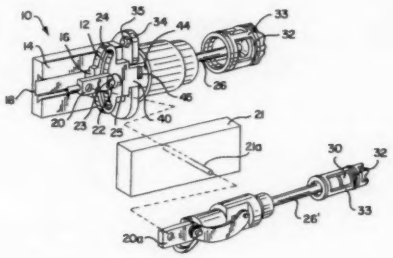
SCOTCH YOKE MECHANISM FOR SECURE TRACK SLIDING

Stephen Andrew Klava, and Justin Blair Bearak, both of Chicago, Ill., assignors to U.S. Filter Corporation, Palm Desert, Calif.

Filed Jan. 6, 2000, Appl. No. 478,786

Int. Cl. B27B *11/02;* **F16H** *21/18*

U.S. Cl. 74—50 **9 Claims**



1. A reciprocating scotch yoke drive mechanism connectable to a motor drive shaft, comprising:

a yoke member connectable to the shaft which moves said yoke member in a linear reciprocating motion;

a guide having at least one slide track configured to defined a reciprocal sliding path for said yoke member;

said yoke member has a sliding formation configured for slidingly engaging said at least one slide track;

said sliding formation and said at least one slide track having complementary configurations for maintaining alignment of said yoke member during reciprocal sliding motion and for engagement of said yoke member in said at least one slide track under a variety of angular stresses;

said sliding formation has a pair of inclined surface portions for securing said yoke member within said at least one slide track;

said at least one slide track has inclined surface portions defining said reciprocal sliding path, and configured for complementarily engaging said inclined surface portions of said sliding formation; and

said engagement between said complementary inclined surface portions of said sliding formation and said slide track providing the only alignment mechanism for said yoke member for reciprocal movement, and;

said yoke member includes a socket at one end thereof and said guide includes a bracket diposed on one end of said at least one slide track, said bracket having a groove configured for slidably receiving said socket.

US 6,330,836 B1

STEEL FOR GEAR DRIVE PLATE GEAR AND METHOD FOR PRODUCING THE DRIVE PLATE GEAR

Hiroshi Watanabe; Masakiyo Ohya, and Masato Shibata, all of Kosai, Japan, assignors to Fujikiko Kabushiki Kaisha, Shizuoka-Ken, Japan

Filed Mar. 30, 2000, Appl. No. 539,111

Claims priority, application Japan, Mar. 30, 1999, 11-089918

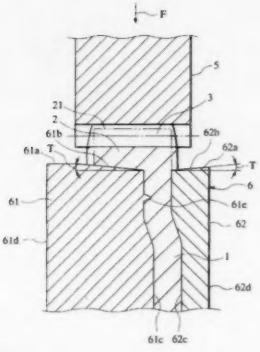
Int. Cl. F16H *55/06;* **C22C** *38/00;* **B23P** *15/14*

U.S. Cl. 74—434 **5 Claims**

1. A steel for a gear, comprising:

C: 0.32 to 0.38%;

Si: 0.1% or less;



Mn: 0.60 to 0.90%;
P: 0.03% or less; and
S: 0.035% or less.

2. A drive plate gear molded of the steel for the gear according to claim **1**, comprising:

an arm (**1**);

a rim (**2**) formed in an annular shape on an outer periphery portion of then arm (**1**), the rim (**2**) having a predetermined thickness in an axial direction; and

a plurality of cogs (**3**) molded on an outer peripheral surface of the rim (**2**) by component rolling,

wherein the rim (**2**) is retained by a molding support die (**6**) which has an inner periphery support surface (**61***a*) for supporting an inner peripheral surface of the rim (**2**) and which includes resistance means for providing resistance to a flow of the rim (**2**) in the component rolling; and

the cogs (**3**) are molded on the rim(**2**) by the component rolling from an outer peripheral surface side while the rim (**2**) is retained by the molding support die (**6**).

US 6,330,837 B1

PARALLEL MECHANISM

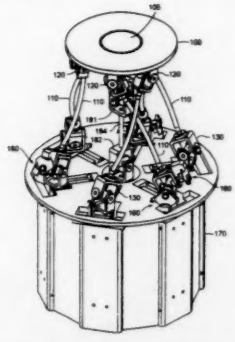
Steve T. Charles, Germantown, Tenn., and Robert S. Stoughton, Albuquerque, N. Mex., assignors to MicroDexterity Systems, Inc., Memphis, Tenn.

PCT No. PCT/US98/17722, § 371 Date May 16, 2000, § 102(e) Date May 16, 2000, PCT Pub. No. WO99/10137, PCT Pub. Date Mar. 4, 1999

Provisional application No. 60/056,237, filed on Aug. 28, 1997. This PCT application Aug. 27, 1998, Appl. No. 486,287.

Int. Cl. B25J *11/00;17/02*

U.S. Cl. 74—490.06 **29 Claims**



1. A parallel mechanism for manipulating an object in space comprising:

a platform for supporting an object to be manipulated;

a plurality of links each having a first end movably connected to the platform and a second end spaced from the platform with the platform being kinematically restrained by the links;

a plurality of first rotatable joints each rotatably connecting the first end of one of the links to the platform and a plurality of second rotatable joints each connected to the second end of one of the links, each of the first joints having a center of rotation located on a first circle with a first axis and each of the second joints having a center of rotation, the mechanism having a reference position in which the center of rotation of each of the second joints is located on a second circle coaxial with and spaced from the first circle, a line connecting the centers of rotation of the first and second joints of each link crossing a line connecting the centers of rotation of the first and second joints of another of the links when the mechanism is in the reference position and viewed along the first axis;

a plurality of linear motors each associated with one of the links and having a movable portion capable of translating the first end of one of the links to move the platform;

a rotatable support member rotatably supported by the platform; and

a drive member for rotating the rotatable support member spaced from the platform and drivingly connected to the rotatable support member.

US 6,330,838 B1

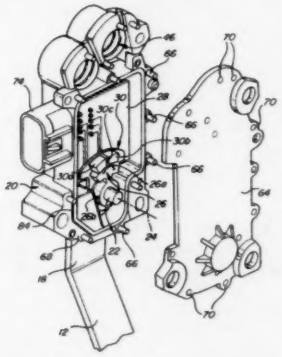
PEDAL ASSEMBLY WITH NON-CONTACT PEDAL POSITION SENSOR FOR GENERATING A CONTROL SIGNAL

Avtar Kalsi, Windsor, Canada, assignor to Teleflex Incorporated, Plymouth Meeting, Pa.

Filed May 11, 2000, Appl. No. 569,003

Int. Cl. G05G *1/14;* **H02G** *3/00*

U.S. Cl. 74—514 **11 Claims**



1. A pedal assembly (**10**) for use to generate a control signal for vehicle system, said assembly comprising:

a housing (**20**);

a pedal arm (**12**) supported for movement relative to said housing (**20**) and having a first end (**14**) connected to a pedal pad (**16**) and a second end (**18**) pivotally supported on a shaft (**22**) to define a pivot axis (**24**); and

a rotor (**26***b*) having a circular body portion (**36**) with a bore (**38**) for receiving said shaft (**22**) and a radially extending arm portion (**40**) interconnecting said circular body portion (**36**) and said arcuate body portion (**34**),

a magnet member including a magnet portion (**26***a*) supported on said arcuate body portion (**34**) for rotational movement with said shaft (**22**) in response to pivotal movement of said pedal arm (**12**) about said pivot axis (**24**);

said housing (**20**) presenting a non-contact sensing surface (**30***c*) for interacting with said magnet member (**26**) to generate an

electric control signal that varies in magnitude by the extent of angular rotation of said magnet member (**26**) relative to said non-contact sensing surface (**30**),

said non-contact sensing surface (**30**c) being positioned adjacent to said magnet member (**26**) to define a gap (**32**) having a predetermined width, said non-contact sensing surface (**30**c) remaining fixed relative to said magnet member (**26**).

US 6,330,839 B1

METHOD AND APPARATUS FOR STRIPPING AND REMOVING THE SHIELDING FROM A CABLE

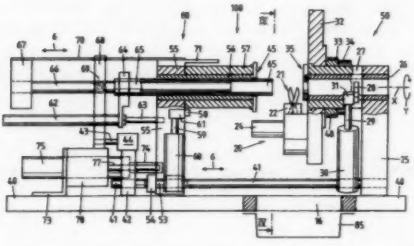
Alois Amrein, Rapperswil, Switzerland, assignor to cawitec AG, Einsiedeln, Switzerland

Filed Aug. 30, 2000, Appl. No. 651,990

Claims priority, application European Pat. Off., Nov. 1, 1999, 99810990

Int. Cl. H02G *1/12*

U.S. Cl. 81—9.51 **21 Claims**



1. A method of stripping and removing shielding from an end of a cable; comprising the steps of:

stripping away from an end of the cable an outer insulating sheath to expose a portion of shielding;

compressing the exposed shielding portion in an axial direction of the cable to so deform the shielding portion as to assume a donut shape which exceeds an outer dimension of the insulating sheath; and

severing a circular section of the shielding portion by a movable cutting unit which servers said circular portion approximately transversely to a longitudinal orientation of the cable.

US 6,330,840 B1

PLANETARY RATCHET WRENCH AND PIPE CUTTING TOOL

Gerald D. McCormick, P.O. Box 387, Freeport, Fla. 32439, and Everett B. James, Jr., 2206 W. 11th St., Panama City, Fla. 32401

Filed Feb. 1, 2000, Appl. No. 495,373

Int. Cl. B25B *17/00*

U.S. Cl. 81—57.3 **11 Claims**

1. A C-shaped, planetary, ratcheting device operable in combination with a ratcheting mechanism, said device comprising:

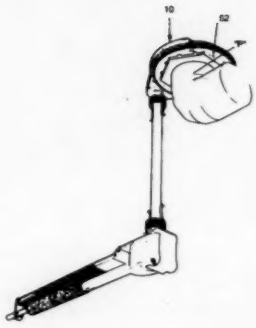
a.) a U-shaped encasement member having a pair of circumferential arms defining an essentially circular space, and a wing extension extending planarly therefrom, where said wing extension includes a circular opening in communication with said circular space;

b.) a circular drive gear, having peripheral gear teeth, positioned for rotative movement within said circular opening;

c.) first and second pivotally joined arcuate members, sized

(i) to form a continuous circle for positioning within said circular space, where said arcuate members feature gear teeth for operable engagement with said circular drive gear,

(ii). to open to allow positioning a work piece within said encasement member,



(iii). internally to accept said work piece;

d.) a pair of spaced apart, overlying C-shaped members to contain said circular drive gear and said arcuate members within said encasement member;

e.) means secured to one of said arcuate members to cooperate with said workpiece to effect closure of said arcuate members into said continuous circle; and,

f.) means to rotatably ratchet said circular drive gear in a clockwise and counter-clockwise directions, where the rotative movement of said circular drive gear effects rotative movement of said arcuate members.

US 6,330,841 B1

APPARATUS FOR DRIVING SCREWS MOUNTABLE ON A DRIVE UNIT

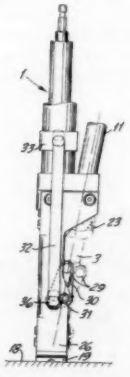
Albert Baumgartner, Kriessern; Richard Sahli, Widnau; Daniel Gasser, Diepoldsau; Paul Muller, Widnau, and Walter Untersander, Berneck, all of Switzerland, assignors to SFS Industrie Holding AG, Heerbrugg, Switzerland

Continuation of application No. 08/605,633, filed on Feb. 22, 1996, now abandoned. This application Mar. 14, 2000, Appl. No. 525,091.

Claims priority, application Germany, Feb. 23, 1995, 195 06 336

Int. Cl. B25B *23/10*

U.S. Cl. 81—57.37 **21 Claims**



1. An apparatus for driving a screw into a workpiece, said apparatus having a housing with an end positionable on the workpiece, said apparatus comprising:

a drive unit attached to the housing and having a drive shaft connected to an engagement tool,

a feed tube mounted to said housing,

a screw holder pivotably mounted on the housing and having a tubular passage, said screw holder being pivotable between a first position, in which the tubular passage is aligned with said feed tube to allow the screw to be loaded into the screw holder via the feed tube, and a second position, in which the tubular passage is aligned with said drive shaft to allow the engagement tool to engage the screw when the screw is in the screw holder, said screw holder having a first section proximate one end of the tubular passage through which said screw is initially received and a second section proximate another end of the tubular passage through which said screw is eventually driven,

a first plurality of locking and centering elements disposed in said first section to temporarily capture the screw when the screw is in the tubular passage,

a second plurality of locking and centering elements disposed in said second section and adapted to center and guide the screw during at least a portion of the driving of the screw into the workpiece, and

wherein said first and second plurality of locking and centering elements are adapted to be displaced radially outwardly in response to the passage of the screw through said tubular passage.

US 6,330,842 B1

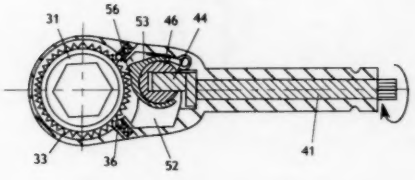
COMPACT HEAD POWER DRIVEN RATCHET TOOL

Kevin Brun, 1509 Grant St., #B, Berkeley, Calif. 94703

Filed Jun. 26, 2000, Appl. No. 603,775

Int. Cl. B25B *13/46*

U.S. Cl. 81—57.39 **15 Claims**



1. A power driven ratchet tool, including:

a wrench head housing and a tubular housing extending therefrom;

a drive shaft extending through said tubular housing to said wrench head housing;

a drive socket secured in said wrench head housing in freely rotating fashion, said drive socket including a central opening therein adapted to releasably engage a standard threaded component;

a plurality of gear teeth spaced about a peripheral surface of said drive socket;

a drive pawl disposed in said wrench head housing, said drive pawl including at least one drive tooth adapted to releasably engage said gear teeth of said drive socket;

reciprocating means coupled between said drive shaft and said drive pawl for translating said drive pawl reciprocally and urging said at least one drive tooth to engage said gear teeth and rotate said drive socket unidirectionally;

means for constraining said drive pawl to translate reciprocally in an arc that is concentric to said drive socket, said means for constraining including a pair of arcuate channels defined in two spaced apart surfaces within said wrench head housing, said drive pawl extending between said two surfaces;

said reciprocating means including a crank pin extending eccentrically from said drive shaft in said wrench head housing, said reciprocating means including a drive pawl pin extending between said two spaced apart surfaces within said wrench head housing, said drive pawl pin including an elongated opening extending therein to receive said crank pin.

US 6,330,843 B1

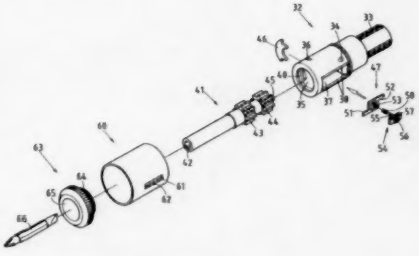
RATCHET SCREWDRIVER WITH ROTATION CONTROL MECHANISM

Chang-Ming Lin, 331, Chang Chun St., Chiu Te Village, Wu Jih Hsiang, Taichung Hsien, Taiwan

Filed Jul. 5, 2000, Appl. No. 610,018

Int. Cl. B25B *13/46*

U.S. Cl. 81—63.1 **1 Claim**



1. A ratchet screwdriver comprising:

a handle having a front end;

a ratchet seat body having a fastening portion fastened to said front end of said handle, said ratchet seat body having an axial hole formed at a front end thereof, said ratchet seat body having a heart hole formed interior thereof at an end of said axial hole, said ratchet seat body having an insertion slot formed at an underside of a front section of said ratchet seat body, said ratchet seat body having a slide slot in a midsection thereof, said slide slot in being in communication with said axial hole, said slide slot having slide edges on respective opposite sides thereof, said ratchet seat body having a threaded mouth at said front end thereof;

a rotary shaft rod having a fitting mouth at a front end thereof, said rotary shaft rod having a first gear and a second gear at a tail section thereof, said rotary shaft rod having a projecting pillar pivotally received in said heart hole, said first gear and said second gear being a projecting pillar pivotally received in said heart hole, said first gear and said second gear being received in said axial hole of said ratchet seat body;

a stop plate disposed in said axial hole and cooperative with said first gear;

an anti-reverse plate slidably mounted on said slide edges of said slide slot, said anti-reverse plate having two anti-reverse edges mounted to said first gear and said second gear, said anti-reverse plate having a locating pillar formed thereon;

a dial knob seat disposed over said anti-reverse plate, said locating pillar of said anti-reverse plate, said dial knob seat having a dial block at a top thereof, said dial knob having locating points formed thereon;

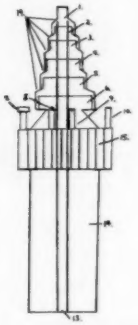
a recovery spring fitted over said fitting tube and positioned between said dial knob seat and said anti-reverse plate;

a housing means covering said ratchet seat body for preventing said stop plate from slipping out of said insertion slot, said housing means having a slot corresponding in location to said dial block of said dial knob seat, said slot of said housing means having a plurality of locating edges corresponding respectively to said locating points;

a lock member having a threaded portion engaged with said threaded mouth and suitable for preventing said housing means from disengagement with said ratchet seat body, said lock member having a receiving hole formed therein; and

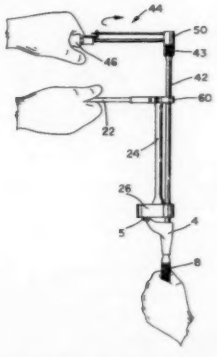
a screw tip received in said fitting mouth of said rotary shaft rod.

US 6,330,844 B1
ULTIMATE NUT DRIVER
Russell Earl Walker, 7011 Wild Fern, San Antonio, Tex. 78238
Filed Jun. 30, 2000, Appl. No. 606,444
Int. Cl. B25B *23/00*
U.S. Cl. 81—439 **4 Claims**



1. A self-contained multi-use tool consisting of set of nut drivers, various screw bits and an adaptor, which comprises a hollow elongated handle having a proximal end and a distal end and attached to said proximal end and a plurality of socket members, each of said plurality socket members has a working end with a cavity formed and sized to individually accommodate the head of a series of nuts or bolts of multiple sizes, which comprises of said sockets to include means of permitting the decreasing assembly of the nut driver members with respect to each other, and with the relative position of the individual sockets within the stack to facilitate the interchangeable usage of the members to ultimately accomplish the goal of the tool which is labor saving time by making the job easier and keeping absolute control of the loose pieces.

US 6,330,845 B1
WRENCH FOR AN IMPLANT
Steven L. Meulink, Warsaw, Ind., assignor to Bristol-Myers Squibb, New York, N.Y.
Filed May 17, 2000, Appl. No. 572,347
Int. Cl. B25B *23/00*
U.S. Cl. 81—462 **16 Claims**



1. A wrench assembly for restraining an implant while applying a torque to the implant, the assembly comprising:

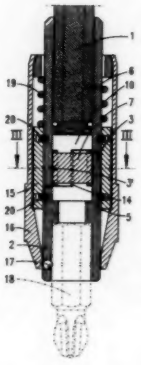
a handle;

a socket shaft depending from the handle in torque transmitting relation;

a socket coupled to the socket shaft in torque transmitting relation, the socket having an implant engaging portion for engaging the implant in torque transmitting relation, the socket further having a through hole aligned with a portion of the implant; and

a driving shaft passing through the through hole in the socket and engaging the portion of the implant such that with the handle torsionaly fixed, the implant is torsionaly fixed by way of the handle, socket shaft, socket and implant connections, and the driving shaft is movable relative to the socket to impart an opposing torque on the portion of the implant.

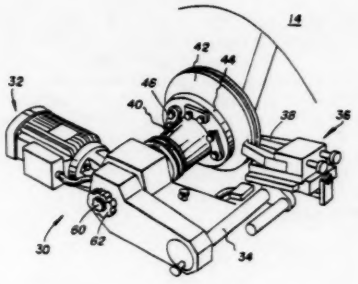
US 6,330,846 B1
CHUCK FOR BITS OR THE LIKE
Martin Strauch, Wuppertal, Germany, assignor to Wera Werk Hermann Werner GmbH & Co., Wuppertal, Germany
Filed May 16, 2000, Appl. No. 483,850
Claims priority, application Germany, Jan. 18, 1999, 199 01 662
Int. Cl. B25B *23/159*
U.S. Cl. 81—477 **13 Claims**



1. Chuck comprising a shank which provides two shank sections (**5**, **6**), forms a clamping section (**1**) at one end for clamping in place in a drive member and forms a tool mounting (**2**) at the other end for mounting a tool, in particular a screwdriver bit (**18**), an elastic element between the clamping-side shank section (**6**) and the tool-mounting-side shank section (**5**) for permitting a stop-limited twisting capability of the clamping section relative to the tool mounting (**2**), wherein the elastic element is formed as a bending spring which is bendable transversely to the axis of the chuck and connects the two shank sections to one another, wherein the bending spring is seated in a cavity which is defined by half-shell sections of the shank sections, said half-shell sections running parallel to one another.

US 6,330,847 B2
APPARATUS AND METHOD FOR AUTOMATICALLY COMPENSATING FOR LATERAL RUNOUT
Harold Newell, S. Newbury, and John Wiggins, Sunapee, both of N.H., assignors to Joseph B. Willey, Lebanon, N.H.
Continuation of application No. 09/480,140, filed on Jan. 10, 2000, which is a division of application No. 08/706,514, filed on Sep. 4, 1996, now Pat. No. 6,050,160. This application Dec. 18, 2000, Appl. No. 738,353.
This patent is subject to a terminal disclaimer.
Int. Cl. B23B *5/04*
U.S. Cl. 82—112 **17 Claims**

1. An on-vehicle disc brake lathe system for resurfacing a brake disc of a vehicle brake assembly, the vehicle brake assembly having an axis of rotation and the brake lathe system comprising:



a lathe body with a driving motor;

a cutting head operably attached to the lathe body;

a drive shaft extending from the lathe body and operably connected to the driving motor so as to be rotated by the driving motor;

a mechanical coupling connected to the drive shaft and configured to provide an adjustable connection between the drive shaft and the vehicle brake assembly; and

an electronic control system connected to the mechanical coupling and operable to automatically adjust the adjustable connection provided by the mechanical coupling to reduce movement of the lathe body relative to the vehicle brake assembly as the drive shaft rotates so as to improve alignment of the lathe body and the cutting head relative to the axis of rotation of the vehicle brake assembly.

US 6,330,848 B1

CIRCULAR SAW CUTTING MACHINE

Satoru Nishio, Aichi-ken, and Kunio Ohno, Aichi-Ken, both of Japan, assignors to Kanefusa Kabushiki Kaisha, Niwa-gun, Japan

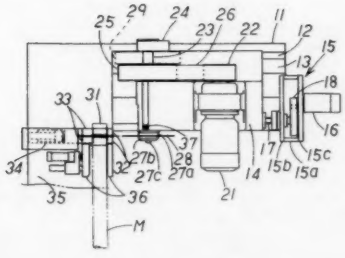
PCT No. PCT/JP99/02781, § 371 Date Jan. 28, 2000, § 102(e) Date Jan. 28, 2000, PCT Pub. No. WO99/62663, PCT Pub. Date Dec. 9, 1999

PCT Filed May 26, 1999, Appl. No. 463,584

Claims priority, application Japan, May 30, 1998, 10-166038; Mar. 15, 1999, 11-068238

Int. Cl. B23D *19/00*

U.S. Cl. 83—62.1 **4 Claims**



1. A circular saw cutting machine for transmitting the rotation of an electric motor to a main shaft and for cutting a work material by using a circular saw attached to one end of the main shaft, characterized in that

a confining engagement gear string is constituted by arranging three or more odd-numbered intermediate gears forming a loop with a main shaft gear fixed to said main shaft, engaged with one another and simultaneously rotated, the rotation of the electric motor is transmitted to one of the intermediate gears, at least one of the intermediate gears is movable and a load is applied to at least one of the movable intermediate gears, thereby eliminating a backlash of the confining engagement gear string; and

if an outside diameter of said circular saw is D (mm), the number of revolution is N (rpm) and a cutting force per tooth as a component of force in tangential direction is F (kgf), a sum J of moments of inertia (kgf·m·sec^2) of main shaft conversion of respective shafts including the main shaft, the respective shafts cooperated with one another in a state in which a backlash is eliminated from said main shaft, is set at $J \geqq F \times (D/2)/[1000 \times 250 \times (N/60)^2]$.

US 6,330,849 B1

STAND FOR AN ELECTRIC POT

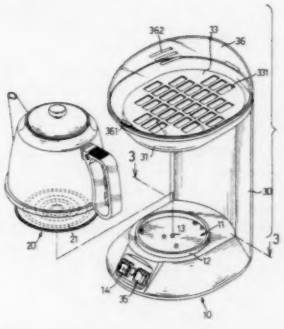
Ming-Hui Chao, No. 158, Chiuying Li, Chiuying, Yonshui Chen, Tainan Hsien, Taiwan

Filed Sep. 15, 2000, Appl. No. 662,680

Claims priority, application Taiwan, Sep. 16, 1999, 88215905

Int. Cl. A47J *31/00;* **F27D** *11/00*

U.S. Cl. 99—288 **2 Claims**



1. A stand for an electric pot comprising:

base configured to receive the electric pot thereon and having on a top face of the base a heating device composed of contacts and a switch electrically connected to the contacts and a flange formed around the contacts so as to limit the movement of the electric pot when the electric pot is placed on the top face of the base; and

a support extending out from a peripheral edge of the base and having a plate integrally formed on and laterally extending out from a distal end of the support, the plate having a heat dissipater embedded inside the base, a grill placed on top of the heat dissipater, a heating element located beneath the heat dissipater and electrically connected with a secondary switch on the base and beside the switch and a cover pivotally connected with the base and having a protrusion formed outside the cover for easy holding and through holes defined to communicate with ambient air to dissipate the heat within the cover.

US 6,330,850 B1

DEVICE FOR PREPARING BEVERAGES FROM WATER-RECONSTITUTABLE FOODSTUFFS

Meinrad Rosse, La Tour-de-Peilz, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

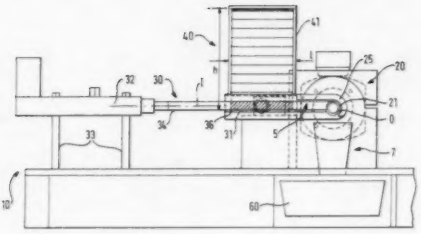
Filed Sep. 8, 2000, Appl. No. 658,653

Claims priority, application European Pat. Off., Nov. 23, 1999, 99203922

Int. Cl. A47J *31/00*

U.S. Cl. 99—289 R **12 Claims**

1. A device for preparing beverages comprising one or more pressing units for urging one or more solid refills of a water-



dispersible foodstuff along a guide surface that directs the refill in a first direction along a first axis towards one or more abrading devices so that the refill contacts the abrading device and the abrading device abrades the refill to provide an amount of powdered foodstuff, a collector to collect the powdered foodstuff, and a liquid supply to provide one or more liquids to be mixed with the powdered foodstuff.

US 6,330,851 B1
ARRANGEMENT OF A PLURALITY OF FOOD-PREPARATION APPARATUSES

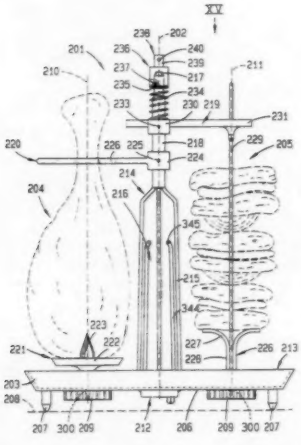
Gottfried Riesselmann, Achtern Diek 34, D-49377, Vechta, Germany, D-49377

Continuation of application No. 08/776,304, filed on May 19, 1997, now abandoned. This application Jul. 6, 1999, Appl. No. 347,992.

Claims priority, application Germany, Jul. 21, 1994, 94 11 508 U; Aug. 24, 1994, 94 13 627 U; Aug. 24, 1994, 94 13 628 U

Int. Cl. A23L *1/00;* **A47J** *37/00*

U.S. Cl. 99—339 **37 Claims**



1. A grilling support, rotatable about a grill axis, for the support of materials to be grilled for exposure to a heating surface in which the grill support can be connected using an adapter, at one end to a driven stud axle, characterized in that the grill support (**201**) includes a base plate (**203**) which extends at right angles to the grilling axis (**202**), is preferably circularly shaped, and is self rotating, wherein the adapter (**212**) is provided centrally on the base place (**203**), and wherein the base plate (**203**) has several connectors (**300**) for interchangeable receivers (**204**, **205**) for the material to be grilled.

US 6,330,852 B1
PROCESS AND A SYSTEM FOR DISTRIBUTION, RECOVERY AND HANDLING OF BULK EDIBLE OIL AND OTHER FLUIDS

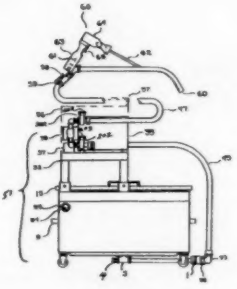
David R. Williams, 445 Calhoun Ave., Destin, Fla. 32540

Continuation of application No. 08/660,768, filed on Jun. 10, 1996, now Pat. No. 5,839,360, Provisional application No. 60/000,190, filed on Jun. 13, 1995. This application Nov. 23, 1998, Appl. No. 583,076.

This patent is subject to a terminal disclaimer.

Int. Cl. A47J *37/00*

U.S. Cl. 99—408 **21 Claims**



1. A system for handling edible oil or other fluids for use in commercial or institutional food preparation establishments, said system comprising:

(a) storage means for storing fresh and waste fluid;

(b) pump means with an intake and a discharge for transferring the fresh fluid from said storage means to a catchment vessel, transferring filtered fluid from a filtering means to said catchment vessel, and transferring said waste fluid to said storage means;

(c) first valve means coupled to said intake for connecting a fresh fluid line and a filtered fluid intake line to said intake and having a plurality of operative modes;

(d) said second valve means coupled further to said discharge for connecting a spent fluid disposal line and a wand dispensing line to said discharge and having a plurality of operative modes; and,

(e) wherein when said first valve means and said second valve means are respectfully in one of said operative modes, said second valve means communicates said filtered fluid from said filtered fluid intake line to said wand dispensing line for dispensing into said catchment vessel; and when said first valve means is in another one of said plurality of operative modes and said second valve means is in said one of said operative modes, said first valve means communicates said fresh fluid from said storage means through said fresh fluid line to said wand dispensing line; and when said first valve means is in said one of said operative modes and said second valve means is in another one of said plurality of operative modes, said second valve means communicates said filtered fluid from said filtered fluid intake line to said fluid disposal line for transport to said storage means.

US 6,330,853 B1
ROTISSERIE

Chih-Hsin Yu, 4F-3, No. 123, Lane 235, Pao-Chiao Road, Hsin Tien City, Taiwan

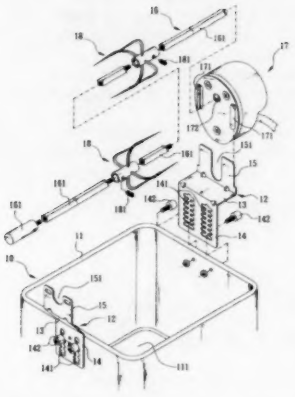
Filed May 16, 2001, Appl. No. 855,489

Int. Cl. A47J *37/00;37/04;37/07*

U.S. Cl. 99—421 H **5 Claims**

1. A rotisserie comprising:

an oven having a space therein;



two brackets each including at least one pair of parallel elongate openings, at least one longitudinal groove coupled with said elongate openings of each pair together, and a recess on one end thereof;

at least one fastener driven through said openings to secure said brackets to opposite sides of said oven respectively,

a motor having at least one fastening member on one side facing said oven mounted on one of said brackets; and

a bar having one end inserted into said motor and said other end rotatably supported on said recess of one of said brackets.

US 6,330,854 B1

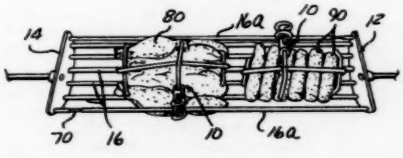
REVERSIBLE CLAMPING MEMBER FOR A ROTISSERIE

John M. Waltman, 3336 Bald Mountain Rd., Auburn Hills, Mich. 48326

Filed Nov. 2, 2000, Appl. No. 705,242

Int. Cl. A47J *37/00;37/04*

U.S. Cl. 99—427 **11 Claims**



1. A reversible clamping member for a rotisserie grill having spaced end plates and a plurality of adjacent rods therebetween in a cradle formation and connected at their ends to the spaced end plates, wherein a one pair of adjacent rods of the grill are spaced to define an opening for the passage of food, the clamping member comprising:

a first main rod and a second main rod, each first and second main rod having a center portion and a pair of end portions, said first main center portion and second main center portion intersecting and connected to said second main center portions;

a pair of U-shaped members secured to the end portions of the first main rod; and

means for connecting one of the end portions of the second main rod to one of the adjacent rods of the grill.

US 6,330,855 B2

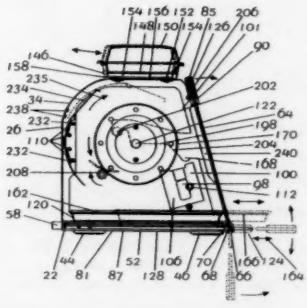
ROTISSERIE OVEN HAVING A HEAT SHIELD

Alan L. Backus, 1660 Bel Air Rd., Los Angeles, Calif. 90077, and Ron Popeil, 1292 Monte Ceilo Dr., Beverly Hills, Calif. 90210

Continuation of application No. 09/662,308, filed on Sep. 15, 2000, which is a continuation of application No. 09/436,614, filed on Nov. 9, 1999, now Pat. No. 6,173,645, which is a continuation of application No. 09/217,944, filed on Dec. 21, 1998, now Pat. No. 6,170,390. This application Feb. 14, 2001, Appl. No. 783,667.

Int. Cl. A47J *37/04*

U.S. Cl. 99—447 **21 Claims**



1. A rotisserie oven for cooking food, comprising:

an enclosure having a plurality of perimeter walls;

a spit rod assembly supported in the enclosure such that the spit rod assembly can rotate about an essentially horizontal axis;

a food cooking heat source positioned within the enclosure; and

a heat shield being disposed between the heat source and one of the perimeter walls;

wherein the heat shield includes a handle whereby a user of the rotisserie oven can grip and remove the heat shield from the enclosure by rotating the heat shield essentially about the axis of rotation of the spit rod assembly.

US 6,330,856 B1

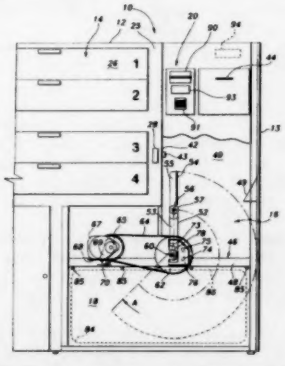
GARMENT DISPENSING AND RECEIVING APPARATUS

Robert M. Fitzgerald, Norcross; Eugene O. Gresens, Suches, and Ward P. Broom, Snellville, all of Ga., assignors to Innovative Product Achievements, Inc., Duluth, Ga.

Filed Jan. 28, 1999, Appl. No. 238,758

Int. Cl. B30B *15/28;7/00*

U.S. Cl. 100—52 **16 Claims**



1. An apparatus for dispensing and receiving goods, said apparatus comprising:

a cabinet;

a dispensing device for cloth items positioned in an upper portion of said cabinet;

a receiving chamber positioned adjacent to said dispensing device in said upper portion of said cabinet and including an opening through which cloth items may be inserted into said receiving chamber;

a storage chamber positioned in a lower portion of said cabinet and extending beneath both said receiving chamber and said dispensing device, said storage chamber defining an opening communicating with said receiving chamber; and

an arm movable in a first direction from an initial position to an extended position and movable back toward said initial position in a second direction opposite to said first direction, to move cloth items to a portion of said storage chamber beneath said dispensing device.

US 6,330,857 B1

PRINTING MACHINE USING LASER EJECTION OF INK FROM CELLS

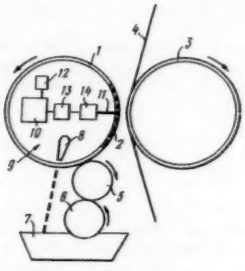
Sergei Nikolaevich Maximovsky, Ulitsa Skakovaya, d. 34, korp.4, kv.235, and Grigory Avramovich Radutsky, Ulitsa Pervomaiskaya, d. 66, kv.45, both of Moscow, Russian Federation

Continuation-in-part of application No. 09/241,266, filed on Feb. 1, 1999, which is a continuation-in-part of application No. 08/981,206, filed as application No. PCT/RU96/00152, filed on Jun. 10, 1996, now abandoned. This application Apr. 13, 1999, Appl. No. 291,254.

Claims priority, application Russian Federation, Jun. 20, 1995, 95109218

Int. Cl. B41J *2/05*

U.S. Cl. 101—116 **8 Claims**



1. A printing machine comprising:

a printing form including a mesh having a first side, a second side facing a receiving medium and a plurality of cells which extend through the mesh and open at the first and second sides, each cell for receiving ink;

an ink applicator for applying ink into the cells of the printing form; and

an ink ejecting apparatus at the first side of the mesh for transferring ink from the cells of the printing form onto the receiving medium, the ink ejecting apparatus including

a quantum generator for generating a laser light beam pulse,

a focusing device for focusing a laser light beam generated by the quantum generator to a selected size,

a deflector for deflecting a focused laser light beam over the first side of the mesh at the cells;

the quantum generator being operable for generating a laser light beam pulse having a duration which renders the generated light beam pulse capable of being absorbed by a small portion of a volume of ink contained in one of the cells to induce boiling of the small portion of the ink in the cell for creating a force which acts on the remainder of the ink in the cell to eject the remainder of ink from the cell and toward the receiving medium under the light hydraulic effect.

US 6,330,858 B1

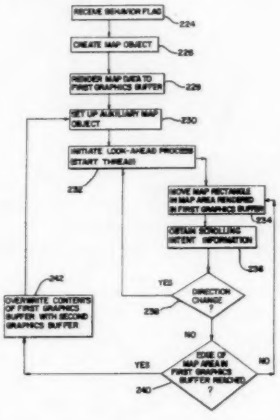
METHOD AND SYSTEM FOR SCROLLING A MAP DISPLAY IN A NAVIGATION APPLICATION

William McDonough, Glen Ellyn; Srinivasa Rao, Mount Prospect, and Ashutosh Srivastava, Elk Grove Village, all of Ill., assignors to Navigation Technologies Corporation, Rosemont, Ill.

Continuation of application No. 09/092,625, filed on Jun. 5, 1998, now Pat. No. 6,163,749. This application Nov. 9, 2000, Appl. No. 710,344.

Int. Cl. G01C *21/32*

U.S. Cl. 101—208 **20 Claims**



1. In a navigation system having a display, a map database and a navigation application having a map display program, a method of scrolling a map on the display comprising the steps of:

providing a first graphics buffer holding map information regarding a geographic region containing a first location position, the map information in the first graphics buffer corresponding to data in a first map object;

providing a second graphics buffer for holding auxiliary map information regarding a geographic region for a predicted future location;

displaying a map area on the display, the map area comprising a portion of the map information in the first graphics buffer; and

executing a look-ahead process for rendering auxiliary map information to the second graphics buffer.

US 6,330,859 B1

METHOD FOR ACTIVATING A DAMPENING APPARATUS

James W. Jakobsen, Bergenfield, N.J.; Carlito Crespo, Spring Valley, N.Y., and Thomas Hayes, Clark, N.J., assignors to Varn Products Company, Inc., Oakland, N.J.

Division of application No. 09/116,269, filed on Jul. 16, 1998, now Pat. No. 6,095,042. This application Jan. 4, 2000, Appl. No. 477,521.

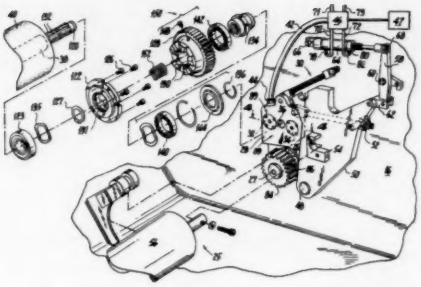
Int. Cl. B41F *1/56*

U.S. Cl. 101—484 **20 Claims**

1. A method for activating a dampening system comprising the steps of:

(a) providing a printing press having a cylinder and a gear train to rotate the cylinder, a dampener having rollers, a dampener actuation device to engage the dampener with the cylinder, drive gearing to drivingly couple the gear train with the rollers, a gear actuation device to engage the drive gearing, and a control system including one or more functions for controlling the dampening system;

(b) deactivating the gear actuation device to disengage the drive gearing;



(c) rotating the cylinder and the gear train in a forward direction, at which time the printing press generates a run signal;

(d) transmitting the run signal to the control system; and

(e) retaining the gear actuation device in the deactivated position with the control system in response to its receipt of the transmitted run signal, the deactivated position being retained at least while the cylinder and the gear train are rotated in the forward direction.

US 6,330,860 B1

METHOD OF BLASTING USING AIR TUBES CHARGED IN A BLASTHOLE

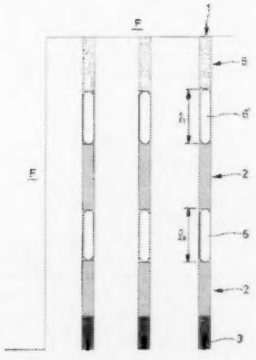
Dae Woo Kang, Shingaegum LG Apt. 216-1702, 455 Gaegum-dong, Busanjin-gu, Busan 614-751, Rep. of Korea

Filed Feb. 24, 2000, Appl. No. 512,192

Claims priority, application Rep. of Korea, Sep. 16, 1999, 1999-39907

Int. Cl. F42B *3/00*

U.S. Cl. 102—313 **15 Claims**



1. An improved method of rock blasting with explosives comprising the steps of:

drilling a series of aligned boreholes in a rock body according to a desired drilling pattern;

charging said boreholes with explosives and an air tube in a predetermined pattern so as to provide a quantitative air decking in every charged borehole; and

detonating said charged boreholes with stemmings on the top of the explosive or air tube.

US 6,330,861 B1

HEIGHT SAFETY SYSTEM

Peter Robert Flux, Inverness-Shire, United Kingdom, assignor to Latchways PLC, Wiltshire, United Kingdom

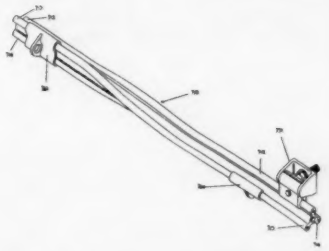
PCT No. PCT/GB98/00435, § 371 Date Oct. 28, 1999, § 102(e) Date Oct. 28, 1999, PCT Pub. No. WO98/35724, PCT Pub. Date Aug. 20, 1998

PCT Filed Feb. 12, 1998, Appl. No. 367,331

Claims priority, application United Kingdom, Feb. 12, 1997, 9702855

Int. Cl. B61B *7/00*

U.S. Cl. 104—115 **19 Claims**



1. A height safety system comprising a flexible elongate element, said element being pretensioned between support brackets at intervals to stiffen its linear form, and shuttle means coupled to said elongate element adapted for movement therealong, said shuttle means including attachment means for receiving a suspended load or a personnel safety line;

said elongate element having primary and secondary track formations independent from each other, said primary track formation providing a continuous path along which said shuttle means is able to traverse without interruption, and said secondary track formation providing attachment points for said support brackets at any point along the extent of the element without obstructing said primary track formation.

US 6,330,862 B1

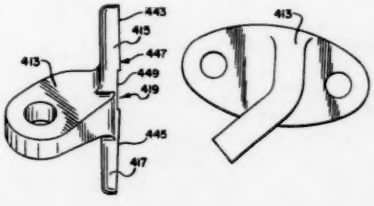
DEAD LEVER LUG

Thomas R. Callahan, Maryville; Anthony J. Bauer, Edwardsville; Charles Moehling, Arlington Heights, all of Ill.; Ronald R. Evers, Alliance, Ohio, and Brian A. Toussaint, Bolingbrook, Ill., assignors to Citicorp USA, Inc., New Castle, Del.

Division of application No. 09/357,061, filed on Jul. 19, 1999, which is a division of application No. 09/058,680, filed on Apr. 10, 1998, now Pat. No. 5,967,053, which is a division of application No. 08/780,546, filed on Jan. 8, 1997, now Pat. No. 5,752,564. This application Mar. 13, 2000, Appl. No. 524,469.

Int. Cl. B61F *1/00*

U.S. Cl. 105—226 **8 Claims**

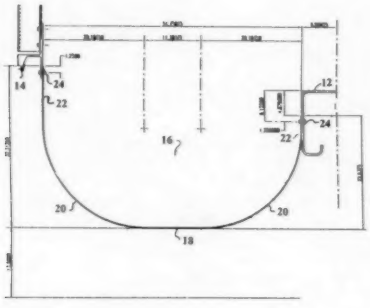


1. A dead lever lug for mounting on a side wall of a bolster of a railway truck, the bolster side wall having two non-parallel surfaces meeting along a juncture, the dead lever lug including:

a pair of arms connected to each other, each arm having a mounting surface shaped to mate with one of the two non-

parallel surfaces of the side wall of the bolster, the mounting surfaces of the arms being separated by a gap for spanning the juncture of the two non-parallel surfaces of the bolster side wall.

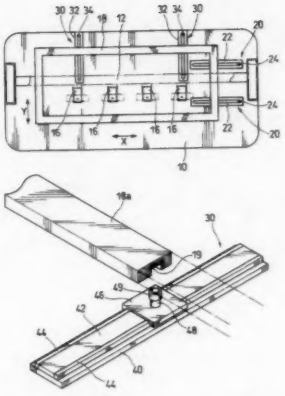
US 6,330,863 B1
RAILROAD CAR TUB
Todd L. Lydic, and William E. Kurtz, both of Johnstown, Pa., assignors to JAC Patent Company, Johnstown, Pa.
Provisional application No. 60/131,395, filed on Apr. 28, 1999. This application Apr. 28, 2000, Appl. No. 561,152.
Int. Cl. B61D *15/00;17/04;17/10*
U.S. Cl. 105—355 **18 Claims**



1. A railroad car comprising a center sill and a pair of car tubs extending longitudinally along the center sill, each said car tub including a pair of curved portions each having a substantially constant radius of curvature and extending from opposed sides of a center section to vertically extending end sections of said car tub, wherein center-points defining respective radii of curvatures for said pair of curved portions are horizontally spaced from each other and positioned along the same horizontal plane.

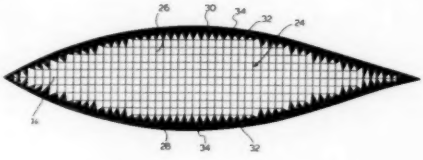
US 6,330,864 B1
SEWING MACHINE WITH IMPROVED FRAME DRIVE DEVICE
Ikuo Tajima, Kasugai, Japan, assignor to Tokai Kogyo Mishin Kabushiki Kaisha, Japan
Filed Mar. 22, 2000, Appl. No. 532,920
Claims priority, application Japan, Mar. 23, 1999, 11-078175
Int. Cl. D05B *21/00;25/00*
U.S. Cl. 112—470.18 **29 Claims**

1. A sewing machine comprising:
a frame for supporting a fabric to be sewn;
a drive device for moving the frame;
the drive device comprising an X-drive mechanism for moving the frame in an X-direction and a Y-drive mechanism for moving the frame in an Y-direction, each of the X-drive mechanism and the Y-drive mechanism including a linear motor as a drive source; and
a machine table positioned below the frame, wherein the linear motor of each of the X-drive mechanism and the Y-drive



mechanism is disposed below the machine table.

US 6,330,865 B1
FLEXIBLE BARGE
James A. Cran, Calgary, Canada, assignor to Dalton Holdings Limited, Hamilton, Bermuda
Continuation of application No. 08/795,537, filed on Feb. 5, 1997, which is a continuation-in-part of application No. 07/886,651, filed on Apr. 2, 1992, now abandoned, which is a continuation of application No. 07/630,895, filed on Dec. 20, 1990, now abandoned, which is a continuation-in-part of application No. 07/417,562, filed on Oct. 5, 1989, now abandoned, which is a continuation of application No. 07/144,274, filed on Jan. 14, 1988, now abandoned. This application Aug. 12, 1999, Appl. No. 372,616.
Int. Cl. B63B *25/08*
U.S. Cl. 114—74 T **14 Claims**



1. A flexible marine barge structure, comprising:
a unilocular hollow flexible bag having a generally planar configuration and a streamlined shape in plan view and constructed to receive a cargo of an aqueous medium less dense than sea water, so that said barge floats in sea water when containing said cargo to a proportion of the capacity of said bag structure such that, when said barge floats in sea water with said cargo, the bag has substantially planar and parallel upper and lower surfaces and a length-to-depth ratio of from about 2:1 to about 50:1, a width-to-depth ratio of from about 2:1 to about 20:1 and a length-to-width ratio of from about 1:1 to about 20:1,
said flexible bag being provided with an exterior reinforcing strapping structure, such that the overall strength (TF) of the combination of reinforcing strapping structure and said elastomer coated mesh material being at least 3 times (F_s) the fabric stress (T) to be borne by the combination in use, which is determined by the relationship:

$$T\ (\text{fabric stress (lbs/ft)}) = \frac{1}{4}\rho^2\left[\frac{1}{\rho} - \frac{1}{\rho_1}\right]d^2$$

where ρ is the density of the cargo in the lbs/ft^3, ρ_s is the density of the marine environment in lbs/ft^3 and d is the depth of the bag, measured from the middle of the top surface in feet,

said trapping comprising an array of straps which is approximately square in plan view provided on the upper and lower planar surfaces of the bag with each strap dimensioned about 6 inches to about 2 feet in width and spaced about 20 to about 60 feet apart one from another.

US 6,330,866 B1

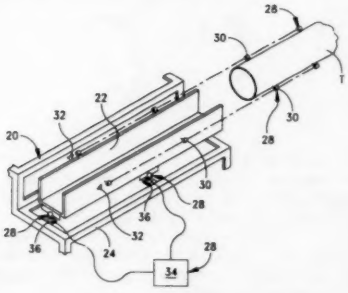
MISSILE SUPPORT AND ALIGNMENT ASSEMBLY

Jeffrey L. Cipolla, Newport, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 22, 1998, Appl. No. 90,222

Int. Cl. B63B *5/00*

U.S. Cl. 114—238 **8 Claims**



1. A missile support assembly for use on a vehicle having a fixed missile launch tube, the assembly comprising:

a loading tray for supporting a missile in line axially with the launch tube;

a frame comprising a skeletal structure for supporting said loading tray such that said loading tray is moveable in directions off-set from a central axis of the missile; and

mounts resiliently connecting said frame skeletal structure to the vehicle to permit said frame structure to springingly float relative to the vehicle.

US 6,330,867 B1

FEEDING DEVICE FOR FEEDING ANIMALS

Henrik Rasmussen, Egebjerg, Denmark, assignor to Egebjerg Maskinfabrik A/S, Nykobing Sjaelland, Germany

PCT No. PCT/DK98/00134, § 371 Date Nov. 17, 1999, § 102(e) Date Nov. 17, 1999, PCT Pub. No. WO98/44784, PCT Pub. Date Oct. 15, 1998

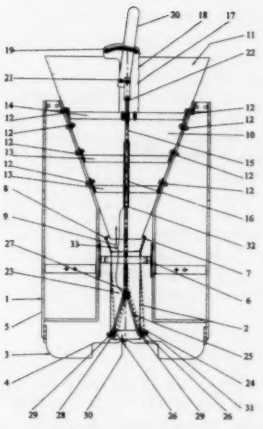
PCT Filed Apr. 3, 1998, Appl. No. 402,223

Claims priority, application Denmark, Apr. 3, 1997, 0379/97

Int. Cl. A01K *61/02*

U.S. Cl. 119—52.1 **9 Claims**

1. A feeding device for feeding fodder to animals comprising a base designed with a fodder plate, a frame fastened to the base, a mainly stiff pipe having an upper end and a lower end, the pipe suspended pivotally in the frame by a suspending means, a funnel-shaped hopper for fodder fixed to the frame and provided with a lower outlet connected to the upper end of the pipe, a dispensing unit formed by the lower end of the pipe wherein the pipe may be slid mainly vertically by a control bar extending through the interior of the hopper and the pipe, the control bar having an upper end and a lower end, the control bar being fastened to the hopper and to the pipe, wherein the upper end of the bar is connected with means for elevating and lowering the pipe, wherein the control bar is fastened to the lower end of the pipe, and wherein the control bar



is elastically flexible and mounted slidably in a slide bushing and fastened to the hopper.

US 6,330,868 B1

Patent Not Issued For This Number

US 6,330,869 B1

CONTROL DEVICE OF AN INTERNAL COMBUSTION ENGINE

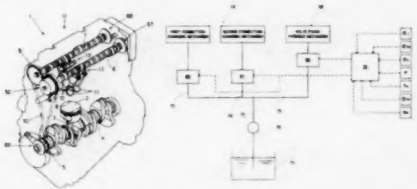
Koichi Yoshiki, and Keiji Tsujii, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 2000, Appl. No. 567,090

Claims priority, application Japan, May 14, 1999, 11-133973

Int. Cl. F02D *13/02;* **F01L** *13/00;1/34*

U.S. Cl. 123—90.15 **5 Claims**



1. A control device of an internal combustion engine, comprising;

an operational condition detecting means for detecting an operational condition of the internal combustion engine;

a valve moving apparatus provided with a first valve control mechanism having a hydraulic valve characteristic changing mechanism for changing valve operation characteristic of at least one of a suction valve and an exhaust valve of said engine, and an oil pressure changing valve for changing pressure of a working oil supplied to said valve characteristic changing mechanism from an oil pressure source;

a first valve operation control means for controlling operation of said oil pressure changing valve in accordance with the operational condition detected by said operational condition detecting means;

control amount holding means corresponding to said respective valve operation characteristic with hold control amounts to control combustion condition of said engine;

a combustion control means operated based on said control amount of said control amount holding means;

a working oil property detecting means for detecting property of said working oil;

a holding time setting means for setting a delay time between change of oil pressure by said oil pressure changing valve and completion of change of valve operation characteristic by said valve characteristic changing mechanism based on property of said working oil detected by said working oil property detecting means and;

changing means for changing said control amount holding means to a control amount holding means corresponding to a changed valve operation characteristic when said delay time elapses after said oil pressure to be supplied to said valve characteristic changing mechanism is changed by said oil pressure changing valve.

US 6,330,870 B1

VARIABLE VALVE TIMING CONTROL SYSTEM

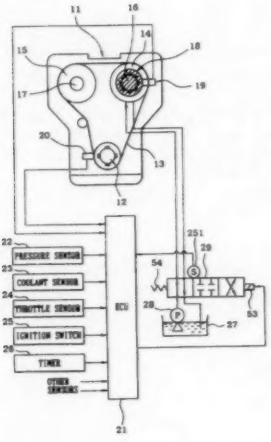
Masaomi Inoue; Osamu Sato, and Michio Adachi, all of Kariya, Japan, assignors to Denso Corporation, Kariya, Japan

Filed Aug. 16, 2000, Appl. No. 639,235

Claims priority, application Japan, Aug. 17, 1999, 11-230431; Nov. 25, 1999, 11-334996; Nov. 25, 1999, 11-334997; Dec. 2, 1999, 11-343125; Dec. 6, 1999, 11-345638

Int. Cl. F01L *1/34*

U.S. Cl. 123—90.17 **41 Claims**



1. A variable valve timing control system for an internal combustion engine, comprising: a variable valve timing adjuster for making the valve timing variable by changing the rotational phase (as will be called the "camshaft phase") of a camshaft with respect to the crankshaft of the internal combustion engine, said variable valve timing adjuster including a lock mechanism for locking said camshaft phase at a substantially intermediate lock position of its adjustable range when the variable valve timing control is not made, wherein the oil pressure for driving said lock mechanism and said variable valve timing adjuster is controlled by a hydraulic control valve,

wherein the improvement comprises:

lock position learning means for learning said lock position on the basis of said camshaft phase which is detected during a lock control for locking said camshaft phase at said lock position.

US 6,330,871 B1

CYLINDER HEAD-INTEGRATED CYLINDER BLOCK AND PROCESS FOR MANUFACTURING THE SAME

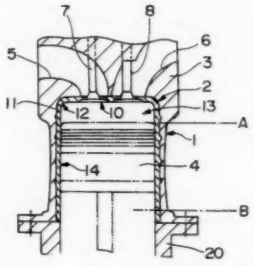
Yasunobu Jufuku, Gotenba; Makoto Ueno, Mishima; Akihiko Hirooka, Susono; Yasuo Imai, Toyota, and Tatsumi Furukubo, Gotenba, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 18, 2000, Appl. No. 552,154

Claims priority, application Japan, Apr. 21, 1999, 11-114244; Dec. 3, 1999, 11-345556

Int. Cl. F02F *1/00;1/24;7/00;11/00*

U.S. Cl. 123—193.3 **9 Claims**



1. A cylinder head-integrated cylinder block, a cylinder head portion having an intake port and an exhaust port and a cylinder block portion whose end face opening is closed by said cylinder head portion being molded integrally by casting;

comprising a cylindrical cup-shaped member having a bottom and integrally molded of reinforced aluminum members having heat resistance and wear resistance for forming a head inner wall portion forming a combustion chamber and a liner portion which is adjacent to said head inner wall portion and against which a piston can slide,

and said cylinder head-integrated block comprising a surrounding member formed of a casting aluminum member by casting such that said cup-shaped member is wrapped in said surrounding member.

US 6,330,872 B1

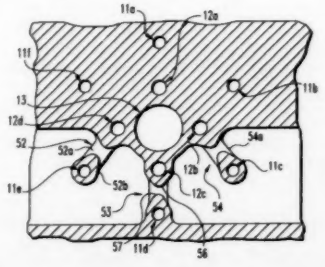
CYLINDER HEAD CASTING WITH GUSSET RIBS

Jay F. Leonard, and John S. Foy, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Aug. 16, 2000, Appl. No. 639,669

Int. Cl. F02F *1/30*

U.S. Cl. 123—193.5 **16 Claims**



1. A unitary cylinder head casting for an engine comprising:

a first casting portion defining a valve guide bore;

a second casting portion defining a head bolt bore; and

a first gusset rib extending between said first casting portion and said second casting portion.

US 6,330,873 B1

METHOD FOR ENGINE CONTROL

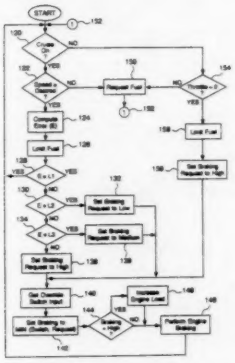
Dennis M. Letang, Canton; Douglas J. Babcock, South Lyon, and S. Miller Weisman, II, Farmington Hills, all of Mich., assignors to Detroit Diesel Corporation, Detroit, Mich.

Continuation of application No. 08/869,036, filed on Jun. 5, 1997, now Pat. No. 5,847,644, which is a division of application No. 08/673,199, filed on Jun. 27, 1996, now Pat. No. 5,647,317, which is a division of application No. 08/535,617, filed on Sep. 28, 1995, now Pat. No. 5,615,654, which is a division of application No. 08/406,114, filed on Mar. 17, 1995, now Pat. No. 5,483,927, which is a division of application No. 08/113,424, filed on Aug. 27, 1993, now Pat. No. 5,445,128.

This application Dec. 30, 1997, Appl. No. 502.

Int. Cl. B60K *31/04;* **F02D** *13/04*

U.S. Cl. 123—322 **11 Claims**



1. A method of controlling the road speed of a vehicle including a multi-cylinder internal combustion engine having means for engine braking, an electronic control unit with memory for controlling the engine, at least one sensor for sensing a vehicle operating parameter from which current vehicle speed can be derived, and means for indicating an overspeed condition, comprising:

providing a plurality engine braking levels operable to a effect a plurality of engine braking loads when activated;

receiving a first commanded engine braking level from the vehicle operator;

sensing the current vehicle speed:

determining a second commanded engine braking level by comparing a current vehicle speed with at least one predetermined speed limit;

selecting the one of the first or second commanded engine braking levels corresponding to the lesser engine braking load; and

activating the engine brake at the selected engine braking level.

US 6,330,874 B2

METHOD FOR THE CYLINDER-SELECTIVE KNOCK CONTROL OF AN INTERNAL COMBUSTION ENGINE

Wojciech Cianciara, Grünthal; Gerhard Fischer, Maxhütte-Deglhof, and Thomas Haug, Straubing, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of application No. PCT/DE99/01787, filed on Jun. 17, 1999. This application Dec. 22, 2000, Appl. No. 750,209.

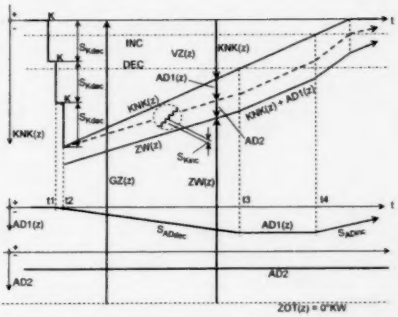
Claims priority, application Germany, Jun. 22, 1998, 198 27 704

Int. Cl. F02P *5/152*

U.S. Cl. 123—406.2 **6 Claims**

1. A cylinder-selective knock control method for an internal combustion engine, which comprises:

defining, in association with a respective operating point that depends on a load and an engine speed, a cylinder-selective ignition angle from a predetermined cylinder-selective basic



ignition angle associated with knock-free operation and a cylinder-selective knock adjustment angle that increases stepwise with a predetermined step size in a retarded direction each time a knock occurs and decreases stepwise with a predetermined step size in an advanced direction after each engine cycle during knock-free operation;

determining a cylinder-selective first adaptation value of a first adaptation circuit from a comparison of the knock adjustment angle with a first and a second threshold value;

wherein the first threshold value is greater than the step size, specified in the retarded direction, of the cylinder-selective knock adjustment angle, and the second threshold value is less than the step size, specified in the retarded direction, of the cylinder-selective knock adjustment angle;

modifying the cylinder-selective adaptation value of the first adaptation circuit in the retarded direction with a predetermined first adaptation step size after each engine cycle for as long as the knock adjustment angle is greater in terms of an absolute value thereof than the first threshold value;

holding the cylinder-selective adaptation value of the first adaptation circuit constant for as long as the knock adjustment angle is less than the first threshold value and greater than the second threshold value in terms of the absolute value; and

modifying the cylinder-selective adaptation value of the first adaptation circuit in the advanced direction with a predetermined second adaptation step size for as long as the knock adjustment angle is less in terms of the absolute value than the second threshold value;

determining a second adaptation value, associated with all the cylinders, of a second adaptation circuit from a comparison of the average value of all the cylinder-selective adaptation values of the current operating point with a predetermined threshold; and

using the cylinder-selective first adaptation value and the second adaptation value associated with all the cylinders to form a cylinder-selective total ignition angle in accordance with the formula

$$ZW(z)=GZ(z)-KNK(z)-AD1(z)-AD2$$

where z is a number of the cylinder, ZW is the total ignition angle, GZ is the basic ignition angle, KNK is the knock adjustment angle, AD1 is the first adaptation value, and AD2 is the second adaptation value.

US 6,330,875 B1

ENGINE WITH HYDRAULIC FUEL INJECTION AND ABS CIRCUIT USING A SINGLE HIGH PRESSURE PUMP

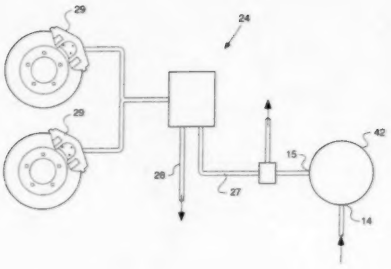
Bradley E. Bartley, Manito; James R. Blass, Bloomington, and Dennis H. Gibson, Chillicothe, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 16, 1999, Appl. No. 464,564

Int. Cl. F02M *33/04*

U.S. Cl. 123—446 **14 Claims**

1. An engine system comprising:



a hydraulically actuated fuel injection system and an ABS circuit connected via a fluid flow passage that provides hydraulic fluid to both the fuel injection system and to the ABS circuit;

an engine lubrication system in fluid communication with the fuel injection system and the ABS circuit;

the hydraulically actuated system including a high pressure pump; and

the fluid flow passage in fluid communication with an outlet from the high pressure pump.

US 6,330,876 B1

HIGH-PRESSURE INJECTION SYSTEM WITH COMMON RAIL

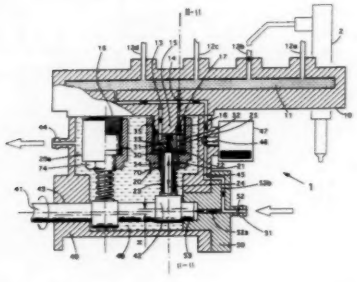
Fritz Spinnler, Mellingen, and Claudio Zanetti, Eglisau, both of Switzerland, assignors to CRT Common Rail Technologies AG, Neuhausen, Switzerland

Filed Nov. 17, 2000, Appl. No. 714,188

Claims priority, application Switzerland, Nov. 19, 1999, 2122/99

Int. Cl. F02M *37/04*

U.S. Cl. 123—456 **16 Claims**



1. A high-pressure injection system for internal combustion engines, comprising:

a high-pressure pump having a plunger cylinder, the plunger cylinder having a delivery chamber;

a port element arranged on an outlet side of the plunger cylinder and having an outlet port, a first end face and a second end face, the port element flow-connected to the delivery chamber and an outlet valve, the first end face of the port element facing the plunger cylinder; and

a high-pressure line element arranged on the outlet side of the port element,

wherein:

the high-pressure line element comprises a common rail with a high-pressure sealing surface, the common rail bears against the second end face of the port element;

the port element is clamped between the plunger cylinder and the common rail; and

the first and second end faces of the port element each comprise a high-pressure sealing surface.

US 6,330,877 B1

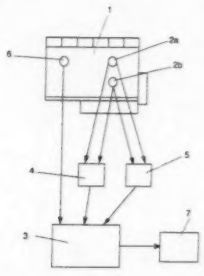
APPARATUS AND METHOD FOR ENABLING THE CALIBRATION AND/OR MONITORING OF A COMBUSTION PROCESS IN A COMBUSTION ENGINE

Mikael Nordin, Södertälje, Sweden, assignor to Scania CV Aktiebolag, Sweden

Filed Apr. 24, 2000, Appl. No. 556,649

Int. Cl. G01L *23/30*

U.S. Cl. 123—480 **16 Claims**



1. Arrangement for enabling calibration and/or monitoring of a combustion process in a combustion engine wherein the engine includes a combustion chamber, in the engine at least one injection device for injecting fuel into the combustion chamber of the combustion engine, and a rotatable crankshaft,

the arrangement comprising:

at least one noise-detecting sensor at the engine and adapted for detecting at least one parameter which derives from noise generated during the combustion process in the engine;

a control unit adapted for receiving signal values representing the parameter from the at least one sensor and for receiving information on the rotation position of the crankshaft in the combustion engine, the control unit being adapted to determine the time for injection of fuel into the combustion chamber and to determine the crankshaft position at that time.

US 6,330,878 B1

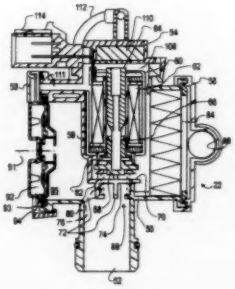
EVAPORATIVE EMISSION LEAK DETECTION SYSTEM INCLUDING VACUUM REGULATOR WITH SENSITIVE SEAL

Paul D. Perry, Chatham, and Ray Rasokas, Thamesville, both of Canada, assignors to Siemens Canada Limited, Mississauga, Canada

Filed May 31, 2000, Appl. No. 583,634

Int. Cl. F02M *37/04*

U.S. Cl. 123—519 **36 Claims**



1. An automotive vehicle comprising:

a fuel-consuming internal combustion engine that powers the vehicle and comprises an intake manifold;

a fuel storage system for storing volatile liquid fuel for consumption by the engine and comprising an evaporative emission space for containing fuel vapor;

an evaporative emission control system comprising a vent valve for selectively opening and closing a vent path from the evaporative emission space to atmosphere, a fuel vapor collection medium disposed in the vent path for trapping fuel vapors so their escape to atmosphere through the vent path is prevented, and a purge valve for selectively opening and closing a vapor purge path from the evaporative emission space to the intake manifold to selectively purge fuel vapors from the evaporative emission space and medium to the engine; and

a vacuum regulator valve for regulating vacuum in the evaporative emission space to a defined magnitude when the vent valve is closed, the purge valve is open, and the engine is running;

wherein the vacuum regulator valve comprises a movable wall dividing a housing into a first chamber space communicated to atmosphere and a second chamber space communicated to the evaporative emission space, a spring resiliently biasing the movable wall in a sense toward decreasing the volume of the first chamber space while increasing the volume of the second chamber space, a through-hole in the movable wall via which the two chamber spaces can communicate, and a compliant, impermeable seal element toward which the movable wall is resiliently biased, the seal element comprising a face disposed to confront the movable wall for selectively sealing against the movable wall around the margin of the through-hole to close the through-hole and unsealing from the margin of the through-hole to open the through-hole.

US 6,330,879 B1

EVAPORATIVE EMISSION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

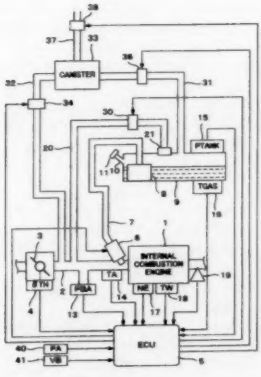
Toru Kitamura; Norio Suzuki; Naohiro Kurokawa, and Tetsuya Ishiguro, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 2000, Appl. No. 604,403

Claims priority, application Japan, Jul. 26, 1999, 11-211074

Int. Cl. F02M *33/02*

U.S. Cl. 123—520 **3 Claims**



1. In an evaporative emission control system for an internal combustion engine, including an evaporative fuel passage for connecting a fuel tank and an intake system of said internal combustion engine, a control valve provided in said evaporative fuel passage for opening and closing said evaporative fuel passage, and control means for controlling the opening degree of said control valve so that the pressure in said fuel tank becomes lower than an atmospheric pressure; the improvement comprising:

tank pressure detecting means for detecting the pressure in said fuel tank,

intake pressure detecting means for detecting the pressure in said intake system, and

enabling means for enabling the opening operation of said control valve in the case that the pressure in said fuel tank is higher than or equal to a pressure value obtained by adding the pressure in said intake system and a predetermined pressure.

US 6,330,880 B1

EXHAUST GAS RECIRCULATION SYSTEM

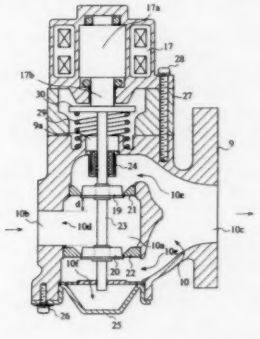
Hidetoshi Okada; Toshihiko Miyake, and Sotsuo Miyoshi, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP98/00838, § 371 Date Jun. 8, 1999, § 102(e) Date Jun. 8, 1999, PCT Pub. No. WO99/43942, PCT Pub. Date Sep. 2, 1999

PCT Filed Feb. 27, 1998, Appl. No. 319,513

Int. Cl. F02M *25/07*

U.S. Cl. 123—568.2 **21 Claims**



1. An exhaust gas recirculation system including:

a recirculation system main body which can be disposed in a recirculation path for exhaust gas,

a movable member on which two closure valves are formed,

a movable space comprising an area formed inside the recirculation system main body in which the movable member is disposed movably,

a first recirculation hole formed to communicate with a central portion of the movable space through an outer face of the recirculation system main body,

second and third recirculation holes formed to communicate with both ends of the movable space through another outer face of the recirculation system main body than in the case of the first recirculation hole, and

two valve seats each of which is in abutment with each of the closure valves when the movable member is located at a preset position in the movable space and which communicate between the central portion and both end portions of the movable space, wherein

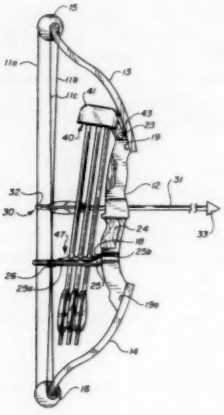
a first movable space opening formed by the communication of the first recirculation hole with the movable space is formed outside the movable range of the closure valves in the movable space.

US 6,330,881 B1

TORQUE BALANCED BOW QUIVER

Jeffrey J. Pippard, 223 Witmer Rd., North Tonawanda, N.Y. 14120

Filed Oct. 12, 1999, Appl. No. 415,077
Int. Cl. F41B *5/06; 5/10*
U.S. Cl. 124—25.7 **23 Claims**



1. The combination of an arrow quiver and archery bow comprising:

an archery bow having a riser section comprising a cable guard extending therefrom;

an arrow head receiver, configured to grip a plurality of arrows at about an arrow head containing end of said arrows;

an arrow shaft receiver, configured to grip shafts of said plurality of arrows at a point spaced rearwardly along said arrows from their respective arrow head ends;

wherein said arrow head receiver is mounted to said riser section of said bow arranged above the centerline of said bow, said cable guard extending from said riser section at a point below said arrow head receiver comprising said arrow shaft receiver, and an arrow gripped by said arrow head receiver and said arrow shaft receiver is held in a plane crossing the arrow launch plane of said bow.

15. A cable guard, for use in an archery bow, said cable guard having an integral elongate body comprising an offset first end, a middle section and distal end section, said offset first end being enabled for attachment of said cable guard to a riser section of an archery bow in an arrangement which positions the middle section offset from the centerline of said attachment, said distal end section having a surface arranged to enable guiding a bow cable, and said middle section having an arrow shaft receiver means arranged to removably grip a plurality of arrows on a surface opposite said surface arranged for guiding said bow cable.

US 6,330,882 B1

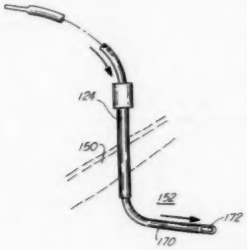
EMERGENCY APPARATUS FOR EVACUATING AIR FROM THE BODY CAVITY

Ronald French, 3525 Prytania St., Suite 606, New Orleans, La. 70115

Filed Mar. 6, 1998, Appl. No. 36,255
Int. Cl. A61M *16/00*
U.S. Cl. 128—200.26 **15 Claims**

1. An apparatus for evacuating air from a body cavity, comprising:

a) an air delivery tube insertable through the skin into the body cavity, having a body portion, a first upper end, a second end insertable through the skin into the body cavity, and a bore extending throughout the body portion to accommodate air flow through the air delivery tube out of the body cavity; and



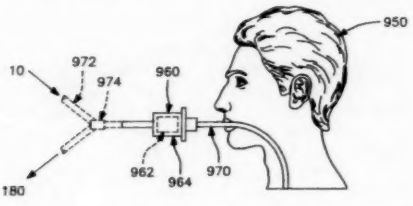
b) flexible tubing having a first end insertable through the bore in the air delivery tube into the body cavity, and a valve on a second end of the flexible tubing to allow the air delivery tube to be removed from the body cavity and the tubing remain to continue to evacuate air from the body cavity.

US 6,330,883 B1

HEAT AND MOISTURE EXCHANGER COMPRISING HYDROPHILIC NYLON AND METHODS OF USING SAME

Richard M. Berger, Midlothian, Va., assignor to Filtrona Richmond, Inc., Colonial Heights, Va.

Filed Feb. 17, 1999, Appl. No. 251,491
Int. Cl. A62B *18/08*
U.S. Cl. 128—201.13 **39 Claims**



1. For use in an artificial airway of a breathing circuit, a heat and moisture exchanger including a gas-permeable element, the improvement which comprises said element being formed, at least in part, of a hydrophilic nylon polymer in sufficient quantity to be warmed and to trap moisture from a patient's breath during exhalation, and be cooled and release the trapped moisture for return to the patient during inspiration to thereby effectively conserve the humidity and body heat of the patient's respiratory tract, said element being constructed to create a pressure drop sufficiently low to minimize effort during normal breathing of the patient or mechanical ventilation.

US 6,330,884 B1

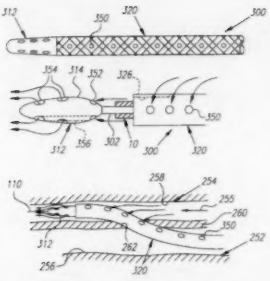
DEFORMABLE SCAFFOLDING MULTICELLULAR STENT

Steven W. Kim, San Jose, Calif., assignor to Transvascular, Inc., Menlo Park, Calif.

Continuation-in-part of application No. 08/970,694, filed on Nov. 14, 1997. This application Jun. 2, 1998, Appl. No. 89,032.
Int. Cl. A61B *19/00*
U.S. Cl. 128—898 **23 Claims**

1. A method of delivering an expandable stent across a channel connecting a vein to an adjacent artery, the method comprising the steps of:

providing a stent delivery device including an elongate member comprising a distal end, the elongate member comprising an



expandable member and a nose cone on the distal end, and a stent in a contracted condition on the expandable member;

inserting the elongate member into an outer sheath to cover the stent, the outer sheath engaging the nose cone to provide a substantially smooth transition therebetween;

advancing the distal end of the elongate member along the vein until the nose cone is advanced into the channel;

positioning the stent across the channel;

withdrawing the outer sheath proximally to expose the stent within the channel;

expanding the stent to an enlarged condition within the channel with the expandable member; and

withdrawing the elongate member from the patient's body.

US 6,330,885 B1

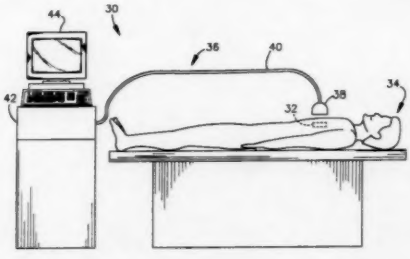
REMOTELY INTERROGATED IMPLANT DEVICE WITH SENSOR FOR DETECTING ACCRETION OF BIOLOGICAL MATTER

Eric M. Weissman, Chagrin Falls, Ohio; William B. Spillman, Jr., Charlotte, Vt., and Elmer D. Dickens, Jr., Richfield, Ohio, assignors to PMD Holdings Corporation, Brecksville, Ohio

Division of application No. 09/275,166, filed on Mar. 24, 1999, now Pat. No. 6,092,530. This application Jun. 14, 2000, Appl. No. 593,349.

Int. Cl. A61B *19/00*

U.S. Cl. 128—899 **16 Claims**



1. An implant device, comprising:

a structure implantable within a living animal and configured to assist in carrying out a biological function within the living animal;

a sensor included as part of the structure, the sensor being operatively configured to detect sound occurring as a result of the biological function within the living animal and to produce an output indicative thereof; and

a communication element included as part of the structure and operatively coupled to the output of the sensor, the communication element being configured to communicate the biological function sound information based on the output of the sensor wirelessly to a remote element located outside the living animal.

US 6,330,886 B1

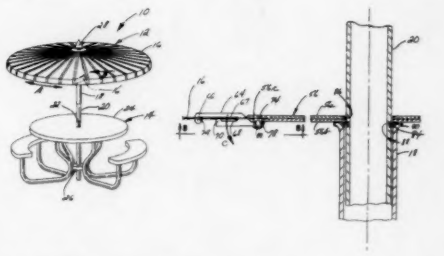
WIND-RESISTANT UMBRELLA

Philip H. Culver, deceased, late of Sarasota, Fla., by Patricia M. Culver, Executrix, assignor to Aerovane Products, Inc., Sarasota, Fla.

Filed Jul. 19, 2000, Appl. No. 619,299

Int. Cl. A45B *25/22*

U.S. Cl. 135—15.1 **15 Claims**



1. A wind-resistant umbrella comprising:

an elongated main support pole;

a tubular secondary pole slidably translatable over said main support pole;

a hub having a periphery and connected at one end thereof to said secondary pole and supportively engaged against a support member on said main support pole whereby, when said main support pole is upright, said secondary pole and said hub are supported on said main support pole by said support member;

a plurality of vanes each having a central end, an outer end and trailing and leading longitudinal edges, said outer end being wider than said central end;

each said central end pivotally connected in evenly spaced relation to and around substantially the entire said hub periphery;

a vane carrier having a periphery and mounted for sliding translation over said secondary pole;

a plurality of rigid or semi-rigid vane support rods each having a central end thereof pivotally connected in evenly spaced relation to and around substantially the entire said vane carrier periphery;

an outer end of each said vane support rod pivotally connected along a mid point of said trailing longitudinal edge of each corresponding said vane;

a clip attached adjacent each said vane outer end;

an elongated substantially non-elastic cord extending circumferentially around and connected to each said clip;

said leading longitudinal edge of each said vane remaining free and overlapping said trailing longitudinal edge of the next adjacent said vane, whereby a portion of each said vane may lift free of the next adjacent said vane in a wind to permit venting of said umbrella.

US 6,330,887 B1

STRUCTURE OF THE MAIN SHAFT OF AN UMBRELLA

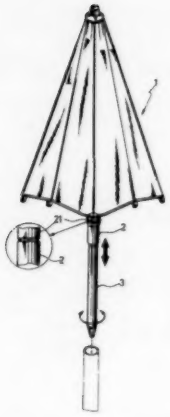
Chuan Tsai Chen, P.O. Box 82-144, Taipei, Taiwan

Filed Apr. 4, 2000, Appl. No. 542,845

Int. Cl. A45B *3/00*

U.S. Cl. 135—16 **1 Claim**

1. An umbrella comprising a main body, a main shaft, an inner shaft, and an eccentric engaging element rotatably connecting the main shaft and the inner shaft, the engaging element comprising an eccentric shaft and a gear cover, the eccentric shaft having a slot therein and an oval-shaped post adjacent the slot, the eccentric shaft having a blocking section adjacent the slot and a seat, the gear cover having a slot formed in a bottom thereof for receiving the blocking section rotatably therein, the gear cover having a tolerance slot, and an outer edge of the gear cover is threaded to grip the inside of the main shaft, and a rolling slot is provided at a



lower section of the main shaft to restrict movement of the engaging element with respect to the inner shaft, the seat of the engaging element is received in the inner shaft.

US 6,330,888 B1
VISUAL STIMULATION CANE FOR PARKINSON'S DISEASE SUFFERERS

Dimitrios Aravantinos; Katina Aravantinos, both of 119 Longdale Dr., Liverpool, N.Y. 13090, and Harold R. Murphy, 209 N. Bellinger St., Herkimer, N.Y. 13350

Filed Apr. 25, 2000, Appl. No. 557,310
Int. Cl. A45B *3/60*
U.S. Cl. 135—66 **20 Claims**

1. A visual stimulation cane, comprising

a shaft which can be carried by a user and having an upper end and a lower end;

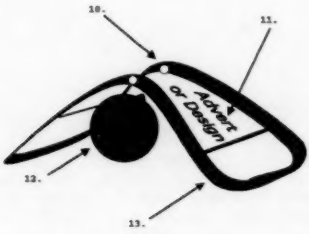
a flat, flexible elongated visual indicator bar disposed at the lower end of the shaft for selectively providing, along a walking surface, a visible line which the user can step over as a visual stimulation for overcoming a freezing episode, said visual indicator bar being movable between a withdrawn position and an extended position, wherein in the extended position the visible indicator bar lies straight and flat against the walking surface, so that the user can visualize a line on the walking surface and step over it; and

an actuator disposed at the lower end of said shaft for permitting the user using one hand at the upper end of the shaft to selectively move said visual indicator between its withdrawn and its extended positions.

US 6,330,889 B1
FACE SHADE

Kym J. Overton, 111 E. 14th St., Apt. 369, New York, N.Y. 10003-4103

Filed Feb. 23, 2000, Appl. No. 511,260
Int. Cl. E04H *15/30*
U.S. Cl. 135—95 **5 Claims**



1. A foldable face shade for a sunbather comprising:

a. a first U-shaped frame component,

b. a second U-shaped frame component,

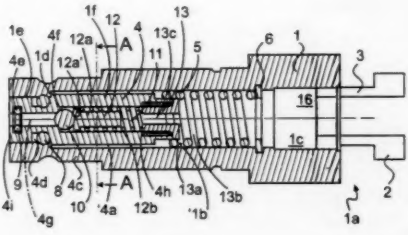
c. a hinge movably connecting the tips of said first U-shaped frame component to the tips of said second U-shaped frame component, whereby said two U-shaped frame components form a frame foldable in half, and

d. UV deflecting material attached to said frame.

US 6,330,890 B1
DEVICE WHICH COMPRISES A RAPID-COUPLING PART CONNECTABLE TO A SYSTEM OF PRESSURIZABLE FLUID AND SUCH A RAPID-COUPLING PART

Thure Ekman, Skövde, Sweden, assignor to Dart Engineering AG, Zug, Switzerland

Filed Feb. 9, 2000, Appl. No. 500,430
Claims priority, application Sweden, Mar. 17, 1999, 9900952
Int. Cl. B63B *35/00*
U.S. Cl. 137—269 **21 Claims**



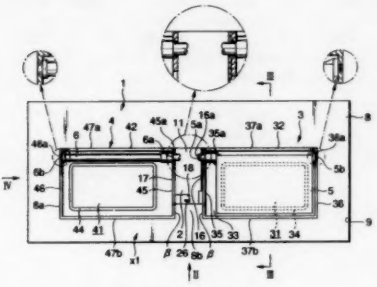
1. A first rapid-coupling part which is connectable to a system of pressurizable fluid, the first rapid-coupling part provides a dual function in which the first rapid-coupling part can be coupled together with a second rapid-coupling part and, in the coupling position of the parts, fluid can be drained off to a first apparatus receiving the drained-off fluid and, in a second function, the first rapid-coupling part receives a probe-shaped unit, inserted in the first rapid-coupling part, for draining off the fluid to a second apparatus connected to the probe-shaped unit.

US 6,330,891 B1

DOUBLE-DAMPER APPARATUS

Seiichiro Noritake, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Apr. 20, 2000, Appl. No. 553,558
Claims priority, application Japan, Apr. 22, 1999, 11-115379
Int. Cl. F16K *11/22*
U.S. Cl. 137—595 **4 Claims**



1. A double-damper apparatus comprising:

a driving portion;

two frame portions arranged on both sides of the driving portion;

two open/close members coupled with the driving portion and performing the operation of opening/closing openings formed in the frame portions, respectively by the driving force of the driving portion; and

a step portion formed between flat portions of the two frame portions,

wherein said step portion has a plane parallel to the direction of the fluid flowing through said openings, and

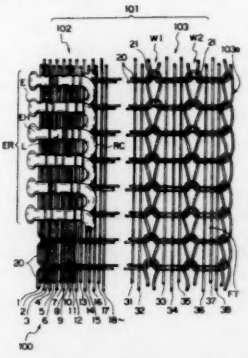
one of a recessed portion and a protruding portion formed by said step portion is engaged with a heat-insulating member for sectioning two fluid channels in which said two openings enter.

US 6,330,892 B1

WOVEN SLIDE FASTENER BELT WITH DIFFERENTLY CONSTRUCTED ATTACHING AND BODY REGIONS

Muchiji Shimono, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan

Filed Mar. 24, 2000, Appl. No. 535,369
Claims priority, application Japan, Apr. 14, 1999, 11-107060
Int. Cl. D03D *25/00*; **A44B** *19/56*
U.S. Cl. 139—384 **15 Claims**



1. A belt woven with warp yarns and weft yarns, wherein said belt is sectioned to an element attaching region, where elements are attachable to said element attaching region, and a tape proper region in a width direction thereof, said tape proper region being continuous and for the purpose of attaching an object,

wherein loops are formed of weft yarns running over substantially an entire width of the belt in said tape proper region while each of said loops is caught with a loop formed with other weft yarns running in parallel to said weft yarns, and

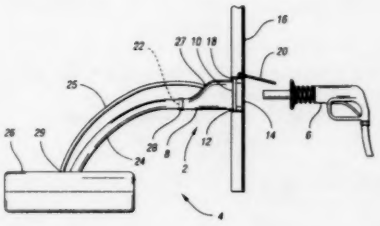
wherein the elements are coupling elements, comprising a coil-like coupling element row of a slide fastener and having upper and lower leg portions, the upper and lower leg portions are disposed above said weft yarns in said element attaching region and fixed to said weft yarns by interlacing said weft yarns and warp yarns, and wherein loop rows of said weft yarns are formed near said element attaching region.

US 6,330,893 B1

FUEL TANK FILTER NECK AND METHOD OF MANUFACTURING SAME

Patrick R. O'Connell, Rochester Hills, Mich., assignor to Shelby Enterprises, Inc., Romeo, Mich.

Filed Dec. 3, 1999, Appl. No. 454,103
Int. Cl. B65B *1/04*
U.S. Cl. 141—46 **19 Claims**



1. A filler neck for receiving a fuel supply nozzle for a motor vehicle fuel tank comprising:

a one-piece seamless funnel member having a tubular body defining in off-set axial relation to each other a relatively large inlet opening adapted for attachment to a receptor for positioning the nozzle with respect to the large inlet opening and a relatively small necked down outlet opening adapted for attachment to the inlet of an elongated tubular member in communication with the fuel tank, the positioning of the nozzle in combination with the offset axial relation inducing a sufficient swirl to the fuel being supplied so as to create a sufficient suctioning effect to prevent fuel vapors from escaping into the atmosphere.

US 6,330,894 B1

WOOD BENDING JIG

Donald G. Austin, P.O. Box 701, 780 Forest Glen Trail, Florissant, Colo. 80816

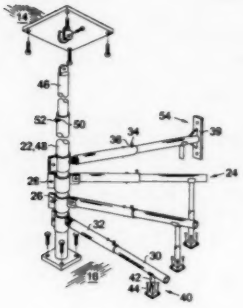
Filed Sep. 14, 2000, Appl. No. 662,011
Int. Cl. B25H *1/01*
U.S. Cl. 144—269 **14 Claims**

1. A jig for bending a wooden board, above a supporting surface comprising:

a trunk; and,

multiple outwardly extending arms each arm having an inner end portion releasably attached to the trunk and an outer arm portion adapted to removably attach the wooden board thereto;

so when the wooden board is attached to the outer end portions of the arms the wooden board will have bent to conform to a



curve defined by the end portions of the arms as it extends up, and around the trunk.

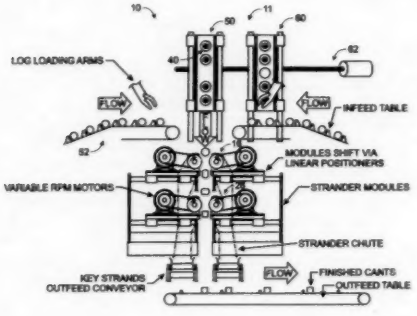
US 6,330,895 B1

LOG FLAKING AND LOADING METHOD AND APPARATUS

Charles T. Carpenter; Robert M. Bayly, both of Lake Oswego, and Bradley R. Stager, Beaverton, all of Oreg., assignors to Key Knife, Inc., Tualatin, Oreg.

Filed May 18, 2000, Appl. No. 574,725
Int. Cl. B27L *11/00;* **B27M** *1/08*

U.S. Cl. 144—373 **14 Claims**



1. A method for flaking a log having an elongate axis, comprising:

(a) providing a first pair of cutting heads, each cutting head carrying one or more knives;

(b) rotating each of the cutting heads about respective, substantially parallel axes;

(c) disposing the log between the cutting heads so that its elongate axis is substantially parallel to said axes and lies in the same, first plane;

(d) relatively translating the cutting heads from a starting distance apart to a smaller distance apart so as to cut two curved surfaces into opposite sides of the log with said knives; and

(e) relatively translating the log with respect to the first pair of cutting heads in a direction substantially perpendicular to said plane.

US 6,330,896 B1

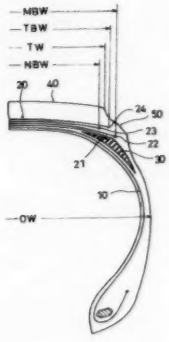
RADIAL-PLY TIRE WITH SPECIFIED BELT STRUCTURE

Takashi Nakasai, and Junichi Ohashi, both of Hyogo, Japan, assignors to Toyo Tire & Rubber Co., Ltd., Osaka, Japan

Continuation of application No. 08/610,795, filed on Mar. 11, 1996, now abandoned, which is a continuation of application No. 08/355,411, filed on Dec. 9, 1994, now abandoned, which is a continuation of application No. 08/140,698, filed on Oct. 21, 1998, now abandoned, which is a continuation of application No. 07/918,163, filed on Jul. 21, 1992, now abandoned, which is a continuation of application No. 07/503,391, filed on Apr. 2, 1990, now abandoned. This application Jul. 11, 1997, Appl. No. 890,730.

Claims priority, application Japan, Apr. 26, 1989, 1-106838
Int. Cl. B60C *9/18;13/02*

U.S. Cl. 152—523 **10 Claims**



1. A radial-ply tire comprising:

a carcass with a tread provided over the carcass;

a belt including four or more belt plies interposed between said carcass and said tread, said belt plies having edge ends between which widths of said belt plies are defined;

rubber pads interposed between said edge ends and said carcass for isolating said edge ends of said belt plies from said carcass;

said belt plies including an outermost belt ply having an outermost belt ply width TBW and an adjacent ply having a width NBW wherein TBW is greater than NBW;

a parameter K having a value not less than 0.1 and not more than 0.4, wherein K is defined by the following equation

$$K = \frac{MBW - TW}{OW - TW}$$

where MBW is a maximum belt ply width of said belt plies, OW is a maximum tire width of the radial ply tire, said tread has a tread width TW, MBW is greater than TW, TBW is greater than TW, and NBW is less than TW.

US 6,330,897 B1

PNEUMATIC TIRE CONTAINING A VULCANIZATION ACCELERATOR

Shun Nakamura, Tokyo; Yuichi Nishimaki, Saitama-ken, and Eiji Yamanaka, Tokyo, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 11, 1997, Appl. No. 891,497

Claims priority, application Japan, Jul. 15, 1996, 8-184975; Jul. 22, 1996, 8-192518; Jul. 23, 1996, 8-193453
Int. Cl. B60C *1/00*

U.S. Cl. 152—537 **10 Claims**

1. A pneumatic tire comprising a pair of bead portions each having a bead filler and a bead core, a carcass layer toroidally

extended between the bead portions, a tread disposed at a crown portion of the carcass layer, and at least two belt layers arranged at the inside of the tread,

the carcass layer having one or plural carcass plies, end portions of the carcass plies being turned up at the respective bead portions, and ends of the turned-up portions of the carcass plies being disposed at a height of 10 to 40 mm from the bottom of the respective bead portions,

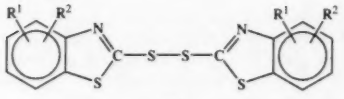
wherein at least one of the bead fillers, the carcass plies and the belt layers comprise a diene-based rubber composition,

and the diene-based rubber composition comprises:

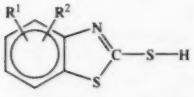
a rubber component selected from the group consisting of butadiene rubber, styrene-butadiene rubber, isoprene rubber, natural rubber and ethylene-propylene-diene rubber;

a sulfur vulcanizing agent in an amount of 2 to 10 parts by weight per 100 parts by weight of the rubber component; and

a vulcanization accelerator represented by the following general formula:



or



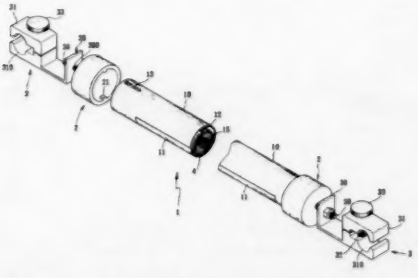
wherein R^1 represents a hydrogen atom, an alkyl group, or an aryl group, and R^2 represents an alkyl group or an aryl group when R^1 represents a hydrogen atom, and represents a hydrogen atom, an alkyl group, or an aryl group when R^1 represents an alkyl group or an aryl group, in an amount of 0.2 to 8.0 parts by weight per 100 parts by weight of the rubber component.

US 6,330,898 B1

RAIN CANOPY APPARATUS FOR A STROLLER

Tony Chang, 16th Floor, No. 302, Jung He Road, Jung He City, Taipei Hsien, Taiwan

Filed Nov. 29, 1999, Appl. No. 450,990
Int. Cl. A47H *1/00*
U.S. Cl. 160—24 **6 Claims**



1. A rain canopy apparatus for a stroller, comprising:

an accommodation pipe, formed by pivotally connecting an upper half pipe and a lower half pipe, the upper half pipe being longer than the lower half pipe, the upper half pipe having two pairs of grooves located at each end thereof, the upper half pipe further including a plurality of interior hooks, and the upper and the lower half pipes having protrusion edges;

two end caps, each end cap having an open end and a closed end, the closed end having a central protruding threaded bar, the open end having a pair of inward flanges to mate with the respective grooves of the upper half pipe for the end cap being, longitudinally slidable along the accommodation pipe;

two clamps, each clamp having a C-shaped vise and an adjusting nut located on top of the C-shaped vise for controlling the tightness of the clamp, each C-shaped vise extending at a respective end to form an L-shaped bracket having a threaded hole for receiving the threaded bar of each respective end cap, the C-shaped vise being fastenable to a respective side bar of a stroller to anchor the accommodation pipe below a top horizontal bar of a stroller; and

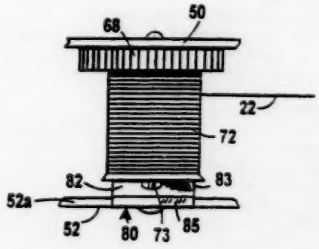
a canopy having a transparent thin waterproof cover with a closed end with a thicker edge locating a plurality of equal-spaced holes for connecting with the respective hooks of the upper half pipe, another end thereof forming a spool to roll up the canopy for storage inside the accommodation pipe, the spool having a central downward detachable tie-up belt connectable with a front lower horizontal bar of a stroller while extending the canopy, the canopy further splitting into two pieces from the thicker edge, and each piece having a plurality of lateral bonded tapes for adhering to another piece and thereby forming the whole canopy.

US 6,330,899 B1

CORDLESS BALANCED WINDOW COVERING

Zazu Ciuca, Jamestown, N.C.; Patrick Woods, Goshen, Ind.; Roger Palmer, High Point, N.C.; Brian Ruggles, Salt Lake City, Utah, and Otto Kuhar, Garfield, N.J., assignors to Newell Window Furnishings. Inc., Freeport, Ill.

Continuation of application No. 09/229,111, filed on Jan. 12, 1999, and a continuation-in-part of application No. 08/629,896, filed on Apr. 10, 1996, which is a continuation of application No. 08/303,773, filed on Sep. 9, 1994, now Pat. No. 5,531,257, which is a continuation-in-part of application No. 08/223,989, filed on Apr. 6, 1994, now Pat. No. 5,482,100, Provisional application No. 60/126,410, filed on Mar. 26, 1999. This application Nov. 29, 1999, Appl. No. 450,109.
Int. Cl. E06B *9/30*
U.S. Cl. 160—170 R **38 Claims**



1. A motor comprising a storage drum having a first axis, an output drum mounted for rotation about a second axis parallel to and spaced from said first axis;

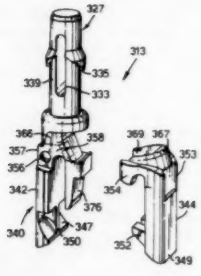
a spring member connected to and between the storage drum and the output drum to form a spring motor, said spring motor having laterally extending, spaced apart drum supports on opposite sides of said drums to support them for rotation therebetween;

a coupled drive connected to said storage and output drum whereby rotation of one of said drums in a first direction about its axis effects rotation of said other of said drums about its axis and in an opposite direction to cause winding and unwinding of said spring member between said drums;

a drive actuator connected to said coupled drive to effect rotation of said drums, and an adjustable friction member engageable

with one of said coupled drive and said drive actuator to adjustably alter the force necessary to effect movement of said coupled drive.

US 6,330,900 B1
HOLDER FOR A DEPENDING ARCHITECTURAL COVERING
Konrad Welfonder, Bremerhaven, Germany, assignor to Hunter Douglas Industries BV, Netherlands
Filed Nov. 3, 1999, Appl. No. 432,925
Claims priority, application European Pat. Off., Nov. 3, 1998, 98203694; Feb. 11, 1999, 99200368; Jul. 7, 1999, 99202210
Int. Cl. E06B *9/36*
U.S. Cl. 160—178.1 V **27 Claims**



1. A holder for suspending a vertical section of an architectural covering from a carrier of a horizontally-extending head rail; the holder comprising:

a downwardly-extending first leg;

a generally downwardly-extending second leg that is pivotally connected to the first leg for movement between a first position, in which it extends substantially parallel to the first leg, and a second position, in which it is at an acute angle to the first leg;

the first leg having a first longitudinal side facing the second leg and the second leg having a second longitudinal side facing the first leg;

one of the first and second longitudinal sides, having a longitudinally-extending first notch and the other of the first and second longitudinal sides having a first shoulder projecting at an angle therefrom so as to be received in the first notch when the second leg is in the first position;

the pivotal connection of the first and second legs defining a pivot axis and extending laterally and being located above the first notch and the first shoulder; and

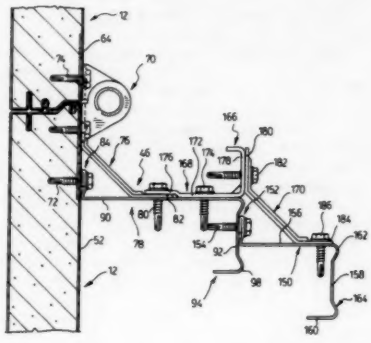
a connector configured to attach the first leg to the carrier, the connector located, above the pivotal connection; and

a spring member, the spring member configured to resiliently bias the second leg towards the first leg, the spring member integrally formed with one of the first and second leg, but distinguishable from either leg.

US 6,330,901 B1
Z-SHAPED STRUT FOR DOOR PANEL
Raymond J. Friesen, Mississauga, and Leonid Ostrovsky, Thornhill, both of Canada, assignors to Raynor Canada Inc., Missussauga, Canada
Filed Nov. 26, 1999, Appl. No. 449,770
Claims priority, application Canada, Nov. 27, 1998, 2255088
Int. Cl. E05D *15/06*
U.S. Cl. 160—201 **11 Claims**

1. A reinforced garage door panel construction comprising:

i) a sandwich panel system having inner and outer skins with interconnecting insulating material,

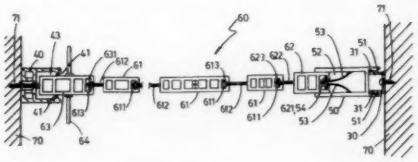


ii) a continuous reinforcing strip extending along an inner face of said inner skin and secured to said inner face,

iii) a modified "Z" shaped structural member extending substantially the length of said panel and secured to said inner skin at said continuous reinforcing strip by fasteners which extend through said skin and into said continuous reinforcing strip,

iv) said modified "Z" shaped structural member having a web with an upstanding front flange and a depending rear flange, said upstanding flange is folded onto itself and said fasteners extend through said overlapping portion of said flange, said depending rear flange having an inwardly extending lip extending essentially parallel to said web and said depending flange having spaced apart reinforcing beads extending the length of said depending flange, and wherein a reinforcing brace extends from said inner skin at said continuous reinforcing strip to said web where said brace is fastened to said inner skin and said continuous reinforcement and to said web.

US 6,330,902 B1
LENGTH ADJUSTABLE FOLDABLE DOOR ASSEMBLY
Chang Than Chen, 12 F, No. 426, Ming Chuan 2nd Road, Chien Chen Chu, Kaohsiung, Taiwan
Filed Jul. 31, 2000, Appl. No. 629,138
Int. Cl. E06B *3/48*
U.S. Cl. 160—231.2 **4 Claims**



1. A foldable door assembly comprising:

a) a first member including a chamber formed therein;

b) a second member slidably engaged in said chamber of said first member, and including a channel formed therein;

c) a latch received in said chamber of said first member for engaging into said channel of said second member and for resiliently coupling said second member to said first member; and

d) at least one spring member formed integral between said latch and said first member for limiting a movement of said latch relative to said first member.

US 6,330,903 B1

MECHANISM FOR CONSTANT BALANCE WITH METHOD FOR MANUFACTURE OF VARIABLE PITCH SCREW

Steve Weinreich, 14 Norton Rd., Monmouth Jct., N.J. 08852

Division of application No. 08/794,872, filed on Feb. 5, 1997, now Pat. No. 6,003,584. This application Jul. 26, 1999, Appl. No. 360,675.

Int. Cl. E06B *9/56*

U.S. Cl. 160—295 3 Claims

1. A method of manufacturing a variable pitch screw in combination with a follower comprising the steps of:

preparing a workable bar with varying cross-sectional dimensions along its longitudinal axis;

retaining the bar within first and second retaining means;

rotating the first and second retaining means, at least 360 degrees relative to one another, about the longitudinal axis of the bar, whereby the bar becomes twisted with a varying pitch;

and joining a follower with the bar to cooperate with the varying pitch of the twisted bar.

US 6,330,904 B2

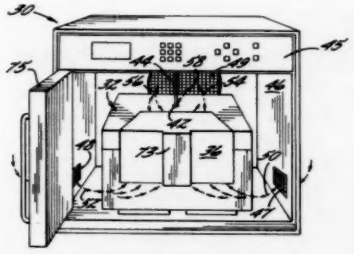
MICROWAVE-BASED PROCESS FOR DENTAL CASTING

Billy Wayne Drake, and Doyle W. Hopkins, both of Charlotte, N.C., assignors to Micro Electronics Group Inc., Charlotte, N.C.

Filed Feb. 17, 1999, Appl. No. 251,536

Int. Cl. B22C *9/02*

U.S. Cl. 164—35 18 Claims



1. A microwave-based process for burnout of a dental casting mold comprising embedding a wax pattern in a suitable thermal investment material to make an investment mold with said wax pattern embedded therein; and eliminating said wax pattern from said investment mold by subjecting said wax pattern and investment mold to microwave radiation under conditions sufficient to obtain burnout of said mold, wherein said microwave is operating at about 700 watts or more, wherein said wax pattern and investment told are enclosed in a microwave transmissive burnout chamber of low thermal conductivity, said burnout chamber being disposed within a microwave retaining chamber, wherein a heat-emissive element is disposed within said burnout chamber, and said investment mold and said heat-emissive element are positioned relative to one other during the mold burnout such that said heat-emissive element is beneath said investment mold and molten flow from an escape channel provided in said investment mold during the mold burnout occurs onto said heat-emissive element, which is adapted to assist said molten flow from said escape channel, wherein fluid flow into and out of said burnout chamber occurs during the mold burnout, and wherein said burnout chamber includes walls forming an opening for a door for access to the chamber interior and fluid flow occurs between said door and said walls.

US 6,330,905 B1

HEAT SINK ASSEMBLY

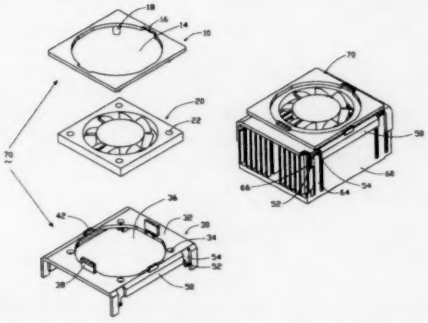
Yeu-Lih Lin, Taipei, and Aimin Huang, ShenZhen, both of Taiwan, assignors to Foxconn Precision Components Co., Ltd., Taipei Hsien, Taiwan

Filed Oct. 10, 2000, Appl. No. 686,207

Claims priority, application Taiwan, Sep. 14, 2000, 89215869

Int. Cl. H05K *7/20*

U.S. Cl. 165—80.3 12 Claims



1. A heat sink assembly comprising:

a heat sink having a plurality of fins at least two fins formed with a catch;

a fan; and

a fixing device comprising an upper portion and a lower portion with the fan interposed therebetween, the upper and lower portions respectively defining upper and lower openings providing air flow access for the fan, the lower portion forming at least two latches for engaging with the upper portion thereby securing the fan between the upper and lower portions, and the lower portion having at least two barbs engaging with the at least two catches of the fins thereby securing the lower portion to the heat sink.

US 6,330,906 B1

HEAT SINK WITH FLANGED PORTIONS AND SPACED APART METAL RADIATING FINS

Mei-Cheng Wang, Taipei, Taiwan, assignor to Chuan Sheng Corporation, Inc., and Shu-Chen Teng, both of Taiwan

Filed Nov. 13, 2000, Appl. No. 709,399

Int. Cl. F28F *7/00*

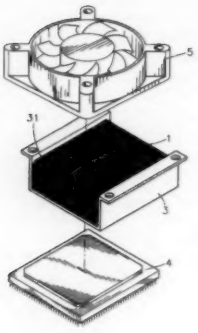
U.S. Cl. 165—80.3 8 Claims

1. A heat sink comprising:

a substantially U-shaped metal casing, said metal casing comprising a bottom wall with a top surface, a receiving space above the top surface;

a plurality of metal radiating fins mounted in the receiving space of said metal casing, the metal radiating fins spaced apart and parallel to each other, the metal radiating fins each including a bottom edge that is attached to the top surface of the bottom wall of the metal casing without contacting one another, the metal radiating fins each comprising two opposite mounting holes;

two metal tie rods, each of the metal tie rods mounted in a respective one of the mounting holes of the metal radiating fins in order to position the metal radiating fins such that the



metal radiating fins are parallel to each other, the metal tie rods each comprising a plurality of flanged portions extending outwardly from the metal tie rods; and

wherein adjacent ones of the flanged portions space apart adjacent ones of the metal radiating fins.

US 6,330,907 B1

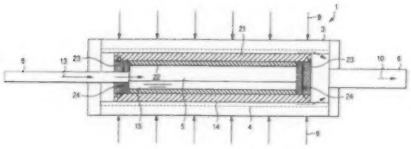
EVAPORATOR AND LOOP-TYPE HEAT PIPE USING THE SAME

Tetsurou Ogushi; Masaaki Murakami; Akira Yao; Takeshi Okamoto; Hiromitsu Masumoto, and Hisaaki Yamakage, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1999, Appl. No. 393,682

Int. Cl. F28D *15/00*

U.S. Cl. 165—104.26 **10 Claims**



1. An evaporator comprising:

a container having an inner surface;

a laminated porous wick including at least first and second laminated wick portions, said wick having a thickness and pores, the pores having diameters that vary with position through the thickness of said wick, wherein said second wick portion is outside said first portion, has an outer surface in contact with said inner surface of said container, and is expanded polytetrafluoroethylene, and said first wick portion has an inner wall surface and is a porous ceramic having a greater rigidity than said second wick portion;

a sump defined by the inner wall surface of said first wick portion, said sump being connected to a liquid pipe for supplying a working fluid in a liquid phase; and

a vapor channel disposed between said container and said second wick portion, said vapor channel providing fluid communication between said wick and a vapor pipe, said vapor pipe guiding the working fluid in a gas phase and being connected to an end portion of said container.

US 6,330,908 B1

HEAT SINK

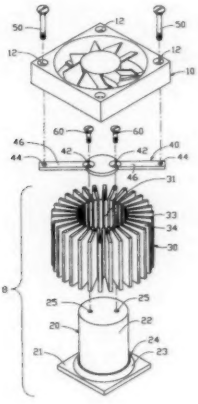
Hsieh Kun Lee, Chung-Ho, and Don-Yun Lee, Tu-chen, both of Taiwan, assignors to Foxconn Precision Components Co., Ltd., Taipei Hsien, Taiwan

Filed Jun. 27, 2000, Appl. No. 605,131

Claims priority, application Taiwan, Mar. 15, 2000, 089204149

Int. Cl. F28F *7/00*

U.S. Cl. 165—185 **17 Claims**



17. A heat sink assembly comprising:

a heat-conductive base including a plate and a column upwardly extending therefrom a distance;

a plurality of radial heat-conductive fins arranged in a ring shape surrounding the column, to restrain radial movement of the fins relative to the base, with a vertical dimension same as said distance so as to have a top surface of the column be adjacent to top faces of said fins;

a planar fastener attached to the top surface of the column and abutting against the top faces of the fins so as to restrain vertical movement of the fins relative to the base; and

a fan retained to and positioned on the fastener.

US 6,330,909 B1

VEHICLE AIR CONDITIONING SYSTEM

Koji Takahashi, Kariya; Yuichi Shirota, Anjo; Koichi Ban, Tokai; Hikaru Sugi, Nagoya; Yasuhiko Niimi, Handa; Hiroshi Kishita, Anjo; Yasushi Yamanaka, Nakashima, and Masayoshi Naka, Okazaki, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Oct. 20, 1999, Appl. No. 421,959

Claims priority, application Japan, Oct. 23, 1998, 10-302848; Nov. 4, 1998, 10-313714; Nov. 4, 1998, 10-313715; Nov. 18, 1998, 10-328537; Nov. 24, 1998, 10-333060; Dec. 10, 1998, 10-351512; Jan. 18, 1999, 11-009663; Feb. 17, 1999, 11-039236; Mar. 19, 1999, 11-076562; Jul. 2, 1999, 11-189412; Sep. 14, 1999, 11-260605; Dec. 16, 1999, 10-358154

Int. Cl. B60H *1/00;1/32*

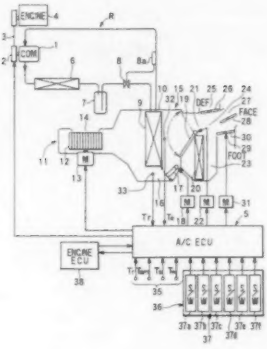
U.S. Cl. 165—202 **77 Claims**

1. An air-conditioning system for a vehicle having an engine and a passenger compartment, the system comprising:

an evaporator for cooling air to be blown into the passenger compartment;

a compressor driven by the engine, for compressing and discharging refrigerant having passed through the evaporator; and

a control unit for controlling air-conditioning state of the passenger compartment, wherein:



when the engine operates, the control unit performs a cold-storing mode where cold quantity stored in condensed water on the evaporator is increased;

when the engine stops, the control unit performs a cold-releasing mode where air is cooled by cold released from the condensed water on the evaporator; and

the control unit sets cooling degree of the evaporator to a low temperature side during the cold-storing mode, as compared with that during the other air-conditioning mode.

US 6,330,910 B1

HEAT EXCHANGER FOR A MOTOR VEHICLE EXHAUST

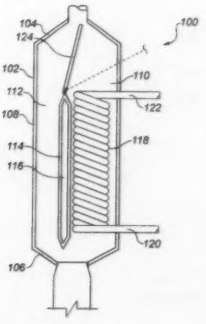
Easton Bennett, 293 Grand Meadow Cr., Edmonton, Alberta, Canada, T6L 1W9

Filed Feb. 25, 2000, Appl. No. 512,911

Claims priority, application Canada, Mar. 19, 1999, 2264186; Jun. 19, 1999, 2273698

Int. Cl. G05D *23/00;* **F01P** *7/00;* **F28F** *27/02*

U.S. Cl. 165—297 **6 Claims**



1. A heat exchanger for a motor vehicle exhaust, comprising:

a tubular body having a first end, a second end, a peripheral sidewall, and at least two flow passages that extend between the first end and the second end, the at least two flow passages including at least one heat exchange fluid flow passage and at least one bypass fluid flow passage;

a heat exchange coil positioned in the at least one heat exchange fluid flow passage, the heat exchange coil having an inlet and an outlet extending through the sidewall of the tubular body;

at least one valve for selecting between the at least one heat exchange fluid flow passage and the at least one bypass fluid flow passage; and

an insulated dual wall positioned between the at least one heat exchange fluid flow passage and the at least one bypass fluid flow passage.

3. A heat exchanger for a motor vehicle exhaust, comprising:

a tubular body having a first end, a second end, a peripheral sidewall, and at least two flow passages that extend between the first end and the second end, the at least two flow passages including at least one heat exchange fluid flow passage and at least one bypass fluid flow passage, with an insulated dual wall positioned between the at least one heat exchange fluid flow passage and the at least one bypass fluid flow passage;

a heat exchange coil positioned in the at least one heat exchange fluid flow passage, the heat exchange coil having an inlet and an outlet extending through the sidewall of the tubular body;

at least one pivotally movable valve member for selecting between the at least one heat exchange fluid flow passage and the at least one bypass fluid flow passage.

US 6,330,911 B1

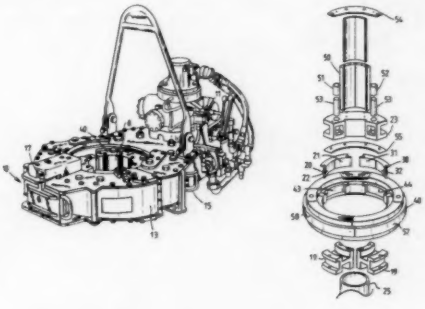
TONG

John Timothy Allen, and Steven Anthony Box, both of Katy, Tex., assignors to Weatherford/Lamb, Inc., Houston, Tex.

Filed Mar. 12, 1999, Appl. No. 267,546

Int. Cl. E21B *19/16*

U.S. Cl. 166—77.51 **5 Claims**



1. A tong for rotating tubulars, the tong comprising

a tong outer case,

a rotary movably mounted in the case for rotating a tubular,

apparatus for rotating the rotary to rotate the tubular,

at least one gripper movably mounted within the rotary and movable by the rotary to grip the tubular, the at least one gripper having at least one cam following member,

at least one non-circular cam surface on the rotary, the at least one cam following member contacting and movable on the at least one non-circular cam surface for maintaining a desired position of the at least one gripper with respect to the tubular,

at least one centering gripper on the rotary for facilitating the gripping of the tubular,

the at least one non-circular cam surface having a shape of part of a spiral, wherein the spiral is an Archimedes spiral.

US 6,330,912 B1

PACK-OFF BUSHING

Ian Gillis, and Craig Knull, both of Leduc, Canada, assignors to Halliburton Energy Services, Inc., Houston, Tex.

Filed Feb. 4, 2000, Appl. No. 497,872

Claims priority, application Canada, Dec. 23, 1999, 2293095

Int. Cl. E21B *33/13*

U.S. Cl. 166—177.4 **24 Claims**

1. A pack-off bushing for placement inside an outer conduit while a fluid is passed through an inner conduit positioned within the outer conduit, the bushing comprising:

(a) a mandrel for connection with the inner conduit, the mandrel having a first mandrel end, a second mandrel end, and defining a mandrel passage axially therethrough for conducting the fluid through the mandrel;

(b) a housing carried on the mandrel between the first mandrel end and the second mandrel end, wherein the housing and the mandrel are capable of an amount of relative axial movement;

(c) a balancing system associated with the mandrel and the housing for applying a balancing force to the mandrel to oppose an axial mandrel force applied to the mandrel; and

(d) a sealing device for providing a seal between the outer conduit and the inner conduit.

US 6,330,913 B1

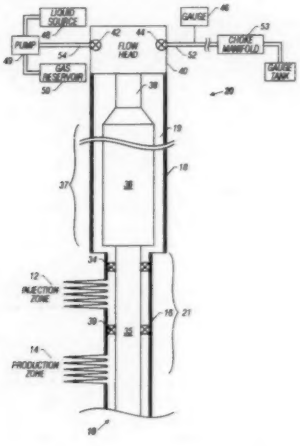
METHOD AND APPARATUS FOR TESTING A WELL

Bjorn Langseth, Missouri City; Christopher W. Spiers, Sugar Land; Mark Vella, Missouri City, and Dinesh R. Patel, Sugar Land, all of Tex., assignors to Schlumberger Technology Corporation, Sugar Land, Tex.

Provisional application No. 60/130,589, filed on Apr. 22, 1999. This application Feb. 25, 2000, Appl. No. 512,438.

Int. Cl. E21B *49/08*

U.S. Cl. 166—250.01 **47 Claims**



1. A test system for testing a wellbore having a first zone, comprising:

a chamber; and

an isolation device moveable in the chamber, the isolation device separating a first and a second portion of the chamber,

the chamber adapted to receive fluid in the second chamber portion from the first zone, the isolation device adapted to be moved in the chamber in a first direction by the first zone fluid,

wherein the wellbore further has a second zone, and wherein the first chamber portion is changeable with fluid pressure to move the isolation device in a second direction to pump the first zone fluid inside the second chamber portion into the second zone.

28. A method of testing a well having a first zone and a second zone, comprising:

flowing fluid from the first zone into a first portion of a chamber;

moving an isolation device that divides the chamber into the first chamber portion and a second chamber portion in a first direction in response to the fluid flow into the first portion; and

applying an elevated pressure in the second chamber portion to move the isolation device in a second direction to flow the fluid in the first chamber portion into the second zone.

US 6,330,914 B1

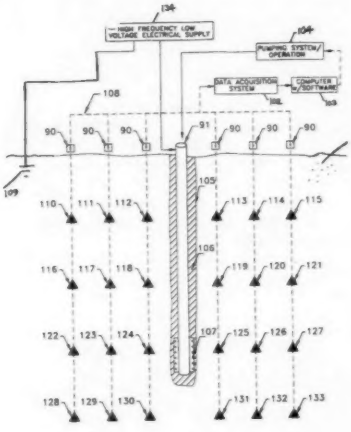
METHOD AND APPARATUS FOR TRACKING HYDRAULIC FRACTURES IN UNCONSOLIDATED AND WEAKLY CEMENTED SOILS AND SEDIMENTS

Grant Hocking, Alpharetta, and Samuel L. Wells, Lawrenceville, both of Ga., assignors to Golder Sierra LLC, Atlanta, Ga.

Division of application No. 09/193,784, filed on Nov. 17, 1998, now Pat. No. 6,216,783. This application May 11, 2000, Appl. No. 574,611.

Int. Cl. G01V *3/00*

U.S. Cl. 166—250.1 **8 Claims**



1. A method for tracking a propagating vertical fracture in a formation of unconsolidated and weakly cemented soil and sediments comprising:

drilling a bore hole with an axis in the formation to a predetermined depth;

installing an injection casing with an outer surface in the bore hole at the predetermined depth;

installing resistivity arrays, comprising a plurality of individual resistivity receivers, at a predetermined set of depths within the formation and within the bore hole;

injecting a fracture fluid into the bore hole;

electrifying the fracture fluid;

initiating a vertical fracture in the injection casing and the formation, wherein the fracture fluid initiates and propagates the vertical fracture; and

regulating the injection of the fracture fluid as the fracture is propagating using a sequential incremental solution to determine incremental fracture geometry changes based on the measured conductivity and induced voltages in the earth due to the propagating fracture fluid.

US 6,330,915 B1
PROTECTION OF DOWNWELL PUMPS FROM SAND ENTRAINED IN PUMPED FLUIDS

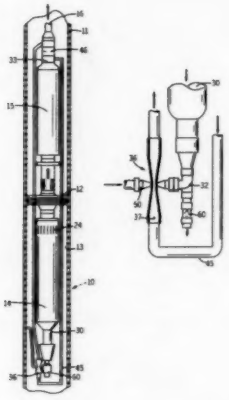
Emmanuel G. Moya, 9275 North Boyd, Fresno, Calif. 93720

Continuation of application No. 09/135,515, filed on Aug. 15, 1998, now Pat. No. 6,167,960. This application Sep. 22, 2000, Appl. No. 668,806.

This patent is subject to a terminal disclaimer.

Int. Cl. E21B *43/00;43/38*

U.S. Cl. 166—265 **9 Claims**



1. A system to reduce an amount of sand from fluid flowing through a submersible pump, comprising:

a sand separator that separates a portion of sand from a wellbore fluid;

a submersible pump that draws fluid minus the portion of sand from the sand separator;

a flow divider that receives and divides the fluid discharged from the submersible pump into a primary fluid flow and a secondary fluid flow;

a sand ejector having a pressure reduction device that entrains separated sand from the sand separator into the secondary fluid flow; and

a flow merging device that merges the secondary fluid flow and separated sand into the primary fluid flow, the sand ejector comprising:

a pressure reduction section, having an inlet, an outlet, and a reduced pressure region, wherein a fluid entering the device through the inlet is reduced in pressure in the reduced pressure region;

a sand nozzle disposed adjacent the reduced pressure region to draw a sand-laden liquid from the sand separator into the secondary fluid flow at the reduced pressure region; and

a flush nozzle, wherein a flush liquid may be discharged into the sand ejector.

8. A method of separating a portion of sand from wellbore fluid prior to pumping the wellbore fluid through a submersible pump, comprising:

drawing a wellbore fluid through a sand separator via a submersible pump;

separating sand from the wellbore fluid prior to the wellbore fluid entering the submersible pump;

separating a portion of fluid from a primary fluid flow discharged from the submersible pump;

utilizing a pressure reduction device to entrain a portion of sand separated by the sand separator into the portion of fluid;

reintroducing the portion of fluid and the portion of sand into the primary fluid flow; and

using a pressure relief valve to divert sand from the pressure reduction device into the wellbore should the pressure reduction device become clogged with sand.

US 6,330,916 B1
FORMATION TREATMENT METHOD USING DEFORMABLE PARTICLES

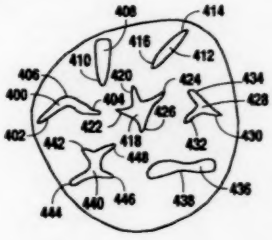
Allan R. Rickards, Pinehurst; Harold D. Brannon, Spring, both of Tex.; Philip J. Rae, Landridge Condo, Singapore; Gino A. DiLullo, Caracas, Venezuela, and Christopher J. Stephenson, Houston, Tex., assignors to BJ Services Company, Houston, Tex.

Continuation-in-part of application No. 09/085,416, filed on May 27, 1998, now Pat. No. 6,059,034, which is a continuation-in-part of application No. 08/756,414, filed on Nov. 27, 1996, now abandoned. This application Mar. 6, 2000, Appl. No. 519,238.

Claims priority, application Denmark, Nov. 21, 1997, 1333/97

Int. Cl. E21B *43/26*

U.S. Cl. 166—280 **60 Claims**



1. A method of treating a subterranean formation, comprising:

injecting a blend comprising a fracture proppant material and a deformable particulate material into a subterranean formation, wherein individual particles of said deformable particulate material have a shape with a maximum length-based aspect ratio of equal to or less than about 5;

wherein said individual particles of said deformable particulate comprise a material having a Young's modulus of between about 500 psi and about 2,000,000 psi at in situ formation conditions;

wherein said individual particles of said deformable particulate material yield upon point to point stress with particles of said fracture proppant material under conditions of formation temperature and formation closure stress; said deformable particulate material also having a composition effective to substantially prevent total deformation of said individual particles upon said point to point stress under said conditions of formation temperature and formation closure stress.

US 6,330,917 B2
RESILIENT WELL CEMENT COMPOSITIONS AND METHODS

Jiten Chatterji, Duncan; Roger S. Cromwell, Walters; Baireddy R. Reddy, Edmond, and Bobby J. King, Duncan, all of Okla., assignors to Halliburton Energy Services, Inc., Duncan, Okla.

Continuation of application No. 09/255,301, filed on Feb. 22, 1999. This application Jan. 23, 2001, Appl. No. 767,554.

Int. Cl. E21B *33/13;* **C08K** *3/00*

U.S. Cl. 166—295 **13 Claims**

1. An improved method of cementing pipe in a well bore comprising the steps of:

(a) preparing a cement composition which hardens into a resilient solid mass having high strength comprised of a hydraulic cement, an aqueous rubber latex, an aqueous rubber latex stabilizing surfactant, an epoxy resin, an epoxy resin hardening agent, and porous precipitated silica hydrophobicized with silicone oil;

(b) placing said cement composition in the annulus between said pipe and the walls of said well bore; and

(c) allowing said cement composition to harden.

US 6,330,918 B1

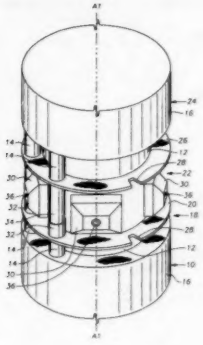
AUTOMATED DOG-TYPE RISER MAKE-UP DEVICE AND METHOD OF USE

Stanley Hosie; George Chalmers, both of Peterhead, and Robert Buchan, Aberdeen, all of United Kingdom, assignors to ABB Vetco Gray, Inc., Houston, Tex.

Provisional application No. 60/121,983, filed on Feb. 27, 1999. This application Feb. 28, 2000, Appl. No. 514,615.

Int. Cl. G21B *7/132*

U.S. Cl. 166—341 **23 Claims**



1. A device for connecting an upper riser spool to a lower string of riser spools, the riser spools being connected to each other by a connector having a plurality of circumferentially spaced dog locks, and the spools each having an ancillary line which runs adjacent to a main line, the device comprising:

a base assembly having a opening with a central axis and a plurality of support members, the support members adapted to engage and support the string along the central axis in the opening;

a rotating member spaced above the base assembly and aligning with the central axis of the opening, the rotating member adapted to engage and rotate the upper spool about the central axis to align the ancillary line of the upper spool with the ancillary line of the string; and

a plurality of connector actuators adjacent the base assembly and spaced in an array about the opening, the actuators adapted to actuate the dog connectors after the upper spool is lowered onto engagement with the string.

US 6,330,919 B1

METHOD OF REMOVING WELLHEAD ASSEMBLIES AND CUTTING ASSEMBLY FOR USE THEREIN

Bruce McGarian, Stonehaven, United Kingdom, assignor to Smith International, Inc., Houston, Tex.

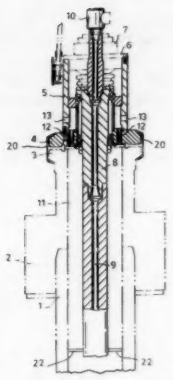
PCT No. PCT/GB97/00639, § 371 Date May 4, 1999, § 102(e) Date May 4, 1999, PCT Pub. No. WO97/33066, PCT Pub. Date Sep. 12, 1997

PCT Filed Mar. 7, 1997, Appl. No. 142,467

Claims priority, application United Kingdom, Mar. 8, 1996, 9604917

Int. Cl. E21B *29/00*

U.S. Cl. 166—361 **9 Claims**



1. A method of cutting a well casing located beneath a subsea wellhead, the method comprising the steps of:

making up a cutting assembly by securing a body of a motor to a motor mounting device and connecting a radially expandable cutter to an output shaft of the motor by means of a tubing string;

lowering the cutting assembly into an operative position in which the cutter is located in the casing below the wellhead and the mounting device is located at or above the level of the wellhead and adjacent a surface of a fixture secured adjacent the wellhead, said surface extending radially of the longitudinal axis of the tubing string;

securing the mounting device to the fixture so as to transmit rotary reaction forces from the mounting device to the fixture and to transmit axial reaction forces from the mounting device to said surface;

radially expanding the cutter into engagement with the casing; and

operating the motor to rotate the tubing string and thereby rotate the cutter to cut the casing.

US 6,330,920 B1

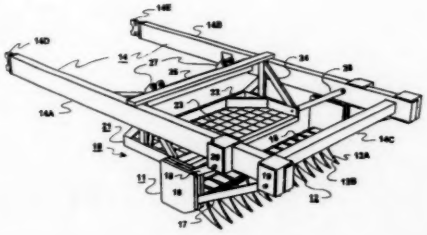
MINE STRIPPER

Christopher J. Wanner, Stafford, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 28, 2000, Appl. No. 493,126

Int. Cl. F41H *11/12;* **F41F** *3/02*

U.S. Cl. 171—19 **6 Claims**

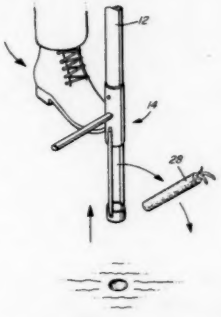


1. A mine stripper with at least one pushbar for attachment to a tractor and a blade bar mounted transversely under said pushbar, said blade bar including:

a series of thin flat rake blades with forward and downwardly directed points, said blades being parallel to a first vertical plane through the longitudindal central axis of said pushbar and joined by separator blocks so that said points define no more than two imaginary straight horizontal lines transverse to said pushbar; and

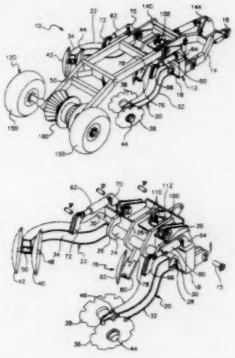
means to mount said blades for limited vertical movement away from said pushbar and for rotating said blade bar about an axis normal to said first plane in direct proportion to the amount of said movement, in a direction such that the angle of attack of said points from horizontal is reduced.

US 6,330,921 B1
LAWN AERATING AND WEEDING TOOLS
Lyle C. Barber, 31549 Monte Vista Crescent, Abbotsford, British Columbia, Canada, V2T 1Y8
Filed Oct. 24, 2000, Appl. No. 694,825
Int. Cl. A01B *45/00*
U.S. Cl. 172—22 **2 Claims**



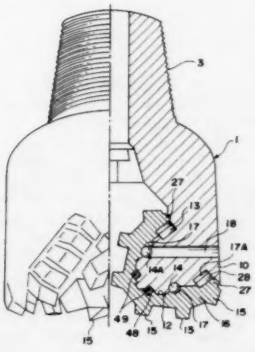
1. A lawn aerating and weeding tool, comprising
an elongate handle;
an elongate metal attachment secured to one end of said handle;
said metal attachment comprising an annular cutting blade at one end of said metal attachment, a retainer at an opposite end of said metal attachment and a connection between said annular cutting blade and said retainer;
said retainer being secured to said one end of said handle;
said connection comprising a pair of parallel elongate connecting members providing a free space extending from said annular cutting blade to said retainer in axial alignment with said annular cutting blade and said handle for accommodating within said free space earth plugs cut by said annular cutting blade;
said free space being open between said pair of connecting members towards opposite sides of said metal attachment along the length of the free space to facilitate removal of the earth plugs; and
a footrest projecting laterally from said retainer,
said retainer comprising a metal tube receiving said one end of said handle, and
said footrest comprising a metal rod extending through said retainer and forming an abutment for said one end of said handle.

US 6,330,922 B1
BEDDING PLOW FEATURING A CENTER-CUT DISK ASSEMBLY HAVING RESILIENT RELIEF MEANS
Thomas P. King, 16190 Forest Glen Ct., Punta Gorda, Fla. 33982
Provisional application No. 60/143,833, filed on Jul. 14, 1999. This application Jul. 14, 2000, Appl. No. 616,755.
Int. Cl. A01B *49/02*
U.S. Cl. 172—166 **9 Claims**



1. A bedding plow apparatus that is operably attachable to a tow vehicle for plowing a forestry bed, said apparatus comprising:
a frame attachable to and adapted for being pulled by the two vehicle along the forestry bed;
a pair of trailing disk assemblies depending from said frame and disposed generally along respective longitudinal sides of the bed, each said trailing disk assembly including a trailing arm that is pivotably connected proximate a forward end thereof to said frame and at least one trailing disk that is mounted to said trailing arm proximate a distal end thereof such that said trailing disk is pulled through the bed as said frame is pulled by the tow vehicle;
a center-cut disk assembly depending from said frame laterally between said trailing disk assemblies, said center-cut disk assembly including a center-cut arm pivotably attached proximate a forward end thereof to said frame and at least one center-cut disk mounted to said center-cut arm proximate an opposite distal end thereof, each said center-cut disk being cuttably engagable with a longitudinal center axis of the forestry bed; and
a relief mechanism resiliently interconnecting an intermediate portion of said center-cut arm with said frame and urging said center-cut disk assembly to extend downwardly and engage the bed so that each said center-cut disk precuts the longitudinal center axis of the bed as the frame is pulled by the tow vehicle along the forestry bed; said relief mechanism further permitting said center-cut disk assembly to retract upwardly and traverse obstructions in the bed.

US 6,330,923 B1
SEALING BEARINGS IN DRILL BITS
Roy W. Wood, 419 Persimmon St., Birmingham, Ala. 35214
Filed Jul. 1, 1999, Appl. No. 345,831
Int. Cl. E21B *10/08*
U.S. Cl. 175—371 **5 Claims**



1. A sealed bearing for a drill bit having a threaded portion and a skirt member, comprising:
a trunion portion on said skirt member;
a recession in said skirt member;
a cutting cone on said trunion portion;
at least one bearing member between said trunion member and said cutting cone;
a smooth recess cavity in said cutting cone;

a cup member having a smooth outer surface abutting the smooth recess cavity;

compressible material in the cup member having an outer lip and an inner lip; and

said inner lip and said outer lip mating with the recess in the skirt member thereby effecting a seal between the skirt member and the cutting cone.

US 6,330,924 B1

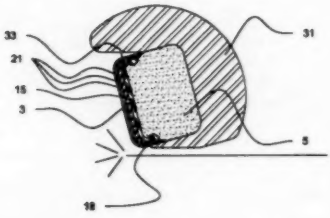
SUPERHARD DRILL BIT HEEL, GAGE, AND CUTTING ELEMENTS WITH REINFORCED PERIPHERY

David R. Hall, 2185 S. Larson Pkwy., Provo, Utah 84606

Continuation-in-part of application No. 08/664,527, filed on Sep. 25, 1996, now abandoned. This application Mar. 30, 2000, Appl. No. 537,551.

Int. Cl. E21B *10/36*

U.S. Cl. 175—430 **8 Claims**



1. A heel, gage, or cutting element, comprising:

(a) a cemented metal-carbide substrate, preferably of tungsten carbide,

(b) the substrate having a major interfacial surface;

(c) the major interfacial surface comprising an inclined edge having one or more inclinations that are circumscribed by one or more furrows or grooves, or the inclined edge comprising flutes,

(d) the major surface and inclined edge of said substrate are bonded to one or more layers of superhard materials by means of high temperature and high pressure in such a manner that the superhard materials extend below a plane of the major interfacing surface.

US 6,330,925 B1

HYBRID ELECTRIC VEHICLE INCORPORATING AN INTEGRATED PROPULSION SYSTEM

Stanford R. Ovshinsky, Bloomfield Hills, and Robert C. Stempel, Troy, both of Mich., assignors to Ovonic Battery Company, Inc., Troy, Mich.

Continuation-in-part of application No. 08/792,358, filed on Jan. 31, 1997, now Pat. No. 5,856,047, and a continuation-in-part of application No. 08/792,359, filed on Jan. 31, 1997, now Pat. No. 5,851,698. This application Nov. 24, 1997, Appl. No. 979,340.

Int. Cl. B60K *6/04*

U.S. Cl. 180—65.3 **15 Claims**

1. A hybrid electric vehicle drive system, comprising:

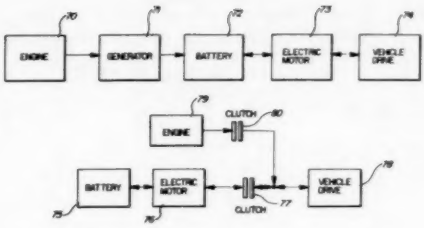
a combustion engine;

an electric motor; and

at least one nickel metal hydride battery module providing electric power to said electric motor, said at least one nickel metal hydride battery module having an internal resistance effective to provide a peak power density in relation to an energy density as defined by:

$P > 1{,}420 - 16E$, with P greater than 600 Watts/kilogram,

where P is the peak power density as measured in Watts/kilogram and E is the energy density as measured in Watt-hours/kilogram.



US 6,330,926 B1

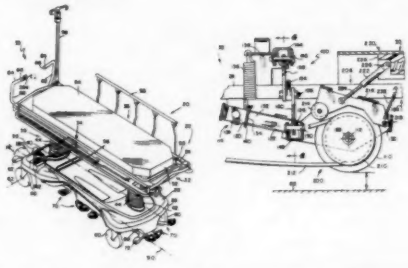
STRETCHER HAVING A MOTORIZED WHEEL

Richard H. Heimbrock, Cincinnati; Matt Webster, Cleves, both of Ohio, and John Vogel, Columbus, Ind., assignors to Hill-Rom Services, Inc., Batesville, Ind.

Provisional application No. 60/154,089, filed on Sep. 15, 1999. This application Nov. 5, 1999, Appl. No. 434,948.

Int. Cl. B60K *1/00*

U.S. Cl. 180—65.5 **41 Claims**



1. A patient support apparatus for transporting a patient along a floor comprising:

a frame,

a plurality of casters rotatably mounted to the frame and engaging the floor,

a wheel,

a first assembly coupled to the frame to rotatably support the wheel between a raised position spaced above the floor and a lowered position engaging the floor,

a drive motor mounted to the frame, and

a remotely activated clutch configured to selectively couple and decouple the drive motor to and from the floor-engaging wheel to permit driving of the wheel or free rotation of the wheel when the wheel is engaging the floor.

US 6,330,927 B1

TIRE SLIP CONTROL DEVICE

Katsuhiko Tokuda, Kakogawa, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 7, 2000, Appl. No. 633,464

Claims priority, application Japan, Aug. 9, 1999, 11-225439; Jun. 26, 2000, 12-191493

Int. Cl. B60K *28/16*

U.S. Cl. 180—197 **20 Claims**

1. A tire slip control device comprising:

an engine;

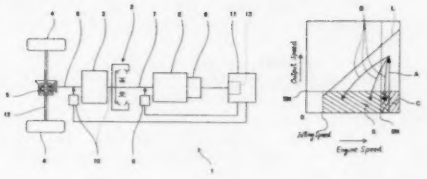
a torque converter connected to an output shaft of the engine;

a transmission for transmitting a traveling driving force from the torque converter to an axle;

an engine rotation detector;

an output rotation detector for the transmission; and

means for restricting the traveling driving force, wherein



the means for restricting the traveling driving force judges that slip has occurred and restricts the traveling driving force when a rate of change of the ratio of an output speed of the transmission to an engine speed per unit time exceeds a first predetermined value in an initial condition in which the output speed of the transmission is a second predetermined value or smaller in a high-speed rotation area of a predetermined engine speed or larger.

US 6,330,928 B1

DRIVING FORCE CONTROL DEVICE FOR FOUR-WHEEL DRIVE VEHICLE

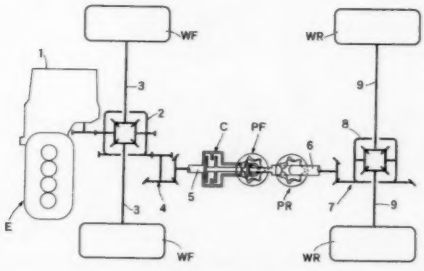
Shigenobu Sekiya; Hiroyuki Matsuo; Keiichi Takahashi, and Yasunori Arai, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 2000, Appl. No. 584,738

Claims priority, application Japan, Jun. 2, 1999, 11-154462

Int. Cl. B60K *17/35*

U.S. Cl. 180—242 **4 Claims**



1. A driving force control device for a four-wheel drive vehicle having a prime mover, one pair of driven wheels driven directly by said prime mover, a hydraulic clutch, and another pair of driven wheels driven via said hydraulic clutch, said control device comprising:

a first hydraulic pump operatively connected to said one pair of driven wheels and driven thereby,

a second hydraulic pump operatively connected to said another pair of driven wheels and driven thereby,

wherein the engagement force of said hydraulic clutch is controlled based on the difference between the discharge and intake amounts of the first and second hydraulic pumps due to the difference in rotation of the two hydraulic pumps such that the engagement force increases according to an increase in the difference between discharge and intake amounts,

an engagement force control means for controlling the engagement force of said hydraulic clutch by selecting from multiple engagement characteristics in which the responsiveness of the torque transmission by said hydraulic clutch is varied according to the driving conditions of the vehicle, and

including a hydraulic oil supply passage for carrying the hydraulic oil produced in accordance with the difference between the discharge and intake amounts of said first and second hydraulic pumps, connected to a hydraulic oil pressure chamber in said hydraulic clutch, wherein said engagement force control means includes an orifice provided in a drain oil passage for draining the hydraulic oil in said hydraulic oil pressure chamber and a switching valve provided between said orifice and said hydraulic oil pressure chamber.

US 6,330,929 B1

RACK BUSHING FOR FLUID POWER ASSISTED RACK AND PINION STEERING GEAR ASSEMBLY

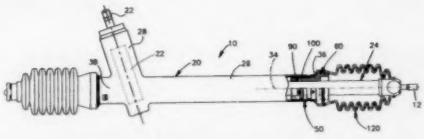
Daniel B. Gierc, Shelby Township; John A. Pietraszewski, Berkley, and Robert E. Feindel, Sterling Heights, all of Mich., assignors to TRW Inc., Lyndhurst, Ohio

Filed Oct. 6, 1999, Appl. No. 417,107

This patent is subject to a terminal disclaimer.

Int. Cl. B62D *5/06*

U.S. Cl. 180—428 **10 Claims**



1. A fluid power assisted rack and pinion steering apparatus for a vehicle, said apparatus comprising:

a rack connectable with steerable wheels of the vehicle, said rack having an axis and being axially movable in opposite directions to turn the steerable wheels in opposite directions;

a housing partially enclosing said rack and defining a fluid chamber, said housing having an inner surface;

a one-piece, plastic bushing encircling said rack and supporting said rack for sliding movement relative to said housing, said one-piece, plastic bushing having a recess on its outer periphery, a portion of said housing being deformed radially inward into said recess to secure said one-piece, plastic bushing to said housing;

an annular first seal member for sealing said fluid chamber, said first seal member encircling said rack and extending between said rack and said one-piece, plastic bushing, said first seal member being disposed completely between said rack and said one-piece, plastic bushing;

an annular, fluid-tight second seal member spaced axially from said first seal member for sealing said fluid chamber, said second seal member encircling said one-piece, plastic bushing and being located in a circumferential groove in said one-piece plastic bushing and said second seal member extending between said bushing and said inner surface of said housing, said one-piece, plastic bushing having a portion projecting axially outward from said housing; and

a bellows member encircling said rack and having an end portion secured to said portion of said one-piece, plastic bushing.

US 6,330,930 B1

RECEPTACLE FOR SOUND-DAMPING ACCOMMODATION OF A UNIT WHICH CAN BE INSTALLED IN A MOTOR VEHICLE

Marko Polic, Sindelfingen, and Günther Weikert, Aidlingen, both of Germany, assignors to DaimlerChrysler AG, Stuttgart, Germany

PCT No. PCT/EP99/02078, § 371 Date Dec. 1, 2000, § 102(e) Date Dec. 1, 2000, PCT Pub. No. WO99/52742, PCT Pub. Date Oct. 21, 1999

PCT Filed Mar. 26, 1999, Appl. No. 647,824

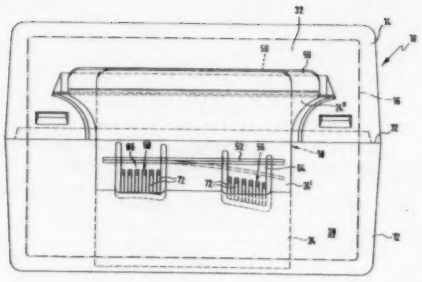
Claims priority, application Germany, Apr. 8, 1998, 198 15 706

Int. Cl. F01N *1/10*

U.S. Cl. 181—204 **8 Claims**

1. A container for the noise-muffling accommodation of a unit to be installed in a vehicle, such as an electric motor, pneumatic pump or the like, comprising:

two container parts, each container part formed by foam parts and fitted together to form a closed housing, said housing



adapted to be clipped to the vehicle bodywork for assembly on neighbouring parts of the vehicle;

a U-shaped holder being partially integrated into one container part, said U-shaped holder being foamed in place, legs of the U of the holder each have a clipping member on mutually opposite wall parts of the container part supporting it, the clipping member extends beyond the aperture edge of the container part for clipping together the two container parts, a flange projects outwards from the container for securing the container in a gap in the bodywork, each flange, on its side remote from the respective clipping member, includes at least one supporting shoulder projecting laterally outward from the container part and said shoulder moulded on to a spring tongue cut out of the leg of the U, said supporting shoulder, when the container is installed, being supported on a marginal part of the bodywork gap located between the flange and the supporting shoulder.

US 6,330,931 B1

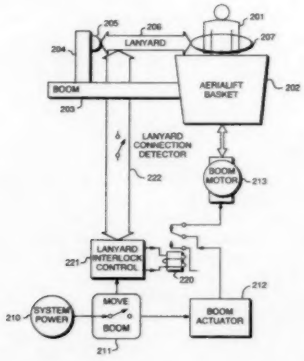
FALL PROTECTION SYSTEM AND METHOD

Paul D. Baillargeon, 103 Horse Corner Rd., Chichester, N.H. 03234, and Kevin Klughart, Concord, N.H., assignors to Paul D. Baillargeon, Chichester, N.H.

Provisional application No. 60/102,583, filed on Sep. 30, 1998. This application Sep. 30, 1999, Appl. No. 409,510.

Int. Cl. A62B *35/00*

U.S. Cl. 182—18 **48 Claims**



1. An operator protection system for preventing the use of machinery unless an operator of said machinery is secured to said machinery, comprising:

at least one lanyard;

a lanyard connection detector for detecting proper attachment of said at least one lanyard to said operator; and

a lanyard interlock control for controlling a switch to selectively enable activation of said machinery when said at least one lanyard connection detector indicates that said at least one lanyard is properly attached intermediate said operator and said machinery,

wherein said lanyard comprises:

a looped lanyard encircling an operator harness D-ring, said looped lanyard including an electrically conductive lanyard strap having first and second electrically conductive fasteners at first and second ends of said conductive lanyard strap, said conductive fasteners in electrically conductive contact with said conductive lanyard strap;

and said lanyard connection detector comprises:

first and second attachment points attached to said machinery, said first and second attachment points electrically separated from each other; and

a conductivity sensor electrically intermediate said first and second attachment points to detect when said looped lanyard is attached intermediate said first and second securing D-rings.

US 6,330,932 B1

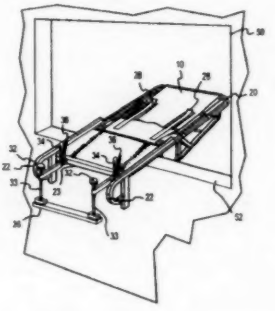
FRAME FOR RESCUE DEVICE

Norman Lee Reece, 940 Daphne, Broomfield, Colo. 80020

Filed Jan. 25, 2001, Appl. No. 769,696

Int. Cl. A62B *1/20*

U.S. Cl. 182—48 **2 Claims**



1. An improved portable rescue device which is lighter in weight and faster and safer and faster to deploy consisting of:

a frame;

said frame having a first section and a second section;

said first section having a platform affixed thereon and said second section having an evacuation chute affixed thereto;

said first section of said frame having a horizontal bar with a plurality of brace arms hingedly affixed to said horizontal bar and said plurality of brace arms having a clamp bar adjustably affixed allowing said clamp bar to be temporarily affixed to an inside window ledge wall;

an over-the-center lock affixed to each said brace arm such that when said clamp bar is in place against said inside window ledge wall said over-the-center lock is actuated securing said clamp bar in place against said window ledge wall;

a second releasable safety lock affixed to at least one of said brace arms such that said over-the-center lock cannot be disengaged without releasing said safety lock preventing said over-the-center lock from accidentally being released;

said second section having a plurality of pressure blocks located at the inner portion of said second section;

said pressure blocks having an upper end and a lower end whereby said upper end is affixed to said frame and lower end is off the perpendicular toward the window ledge at an angle greater than 79 degrees and less than 90 degrees such that when said rescue device is placed on a window ledge said plurality of pressure blocks rest on the exterior of said window ledge and said clamp bar rest against the interior of said

window ledge such that said rescue device is sufficiently secure to allow individuals to descend to safety during an emergency situation.

US 6,330,933 B1

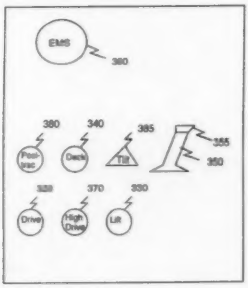
SCISSOR LIFT CONTROL APPARATUS AND METHOD

Brian M. Boeckman, Chambersburg, and Lex A. Mellott, Warfordsburg, both of Pa., assignors to JLG Industries, Inc., McConnellsburg, Pa.

Division of application No. 08/592,181, filed on Jan. 26, 1996, now Pat. No. 5,992,567. This application Nov. 29, 1999, Appl. No. 447,948.

Int. Cl. B66F *11/04*

U.S. Cl. 182—63.1 **3 Claims**



1. A method for controlling movement of a work platform having a movable platform section with a retractable deck, comprising the steps of:

a) receiving operator inputs on a platform control station housed at the movable platform section, the operator inputs corresponding to a request for one of a drive movement, a lift movement and a deck movement of the work platform;

b) receiving sensed inputs on a plurality of locational conditions of the work platform, including height of the movable platform section;

c) based on the received sensed inputs, either allowing, disallowing, or allowing in a cut back state the request based on the received operator inputs,

wherein in the step a), the operator inputs are made via a plurality of function select switches and a joystick, and wherein the operator has a fixed time period in order to effect movement of the work platform if the request is allowed by stroking the joystick within the fixed time period,

wherein the drive movement can be entered by either a normal drive mode or a high drive mode, said high drive mode allowing for a faster drive speed of the work platform than what is allowable in said normal drive mode, and wherein said work platform can be placed in said high drive mode only when said work platform is currently in said normal drive mode,

the method further comprising the step of:

d) monitoring an amount of current required by a drive motor that performs that drive movement of the work platform when in the normal drive mode and the high drive mode, and when the amount of current exceeds a first value when in said high drive mode, said high drive mode is disabled, and said normal drive mode is entered.

US 6,330,934 B1

COMPLETE FLUID EXCHANGE SYSTEM FOR AUTOMATIC TRANSMISSIONS

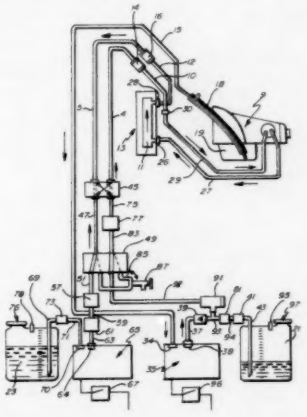
James P. Viken, 9890 Crestwood Ter., Eden Prairie, Minn. 55347

Continuation-in-part of application No. 08/209,261, filed on Mar. 16, 1994, now Pat. No. 5,789,152, which is a continuation-in-part of application No. 07/781,322, filed on Oct. 23, 1991, now Pat. No. 5,318,080. This application Dec. 24, 1996, Appl. No. 772,836.

This patent is subject to a terminal disclaimer.

Int. Cl. F16N *33/00*

U.S. Cl. 184—1.5 **35 Claims**



1. A fluid exchange system for use in exchanging a used fluid with a fresh fluid in a vehicle having an automatic transmission and a fluid cooling circuit operatively connected to conduct a circulated fluid therein, said transmission having a dipstick filler tube, said fresh fluid being contained in and dispensed from a source external to said vehicle, said used fluid initially being contained within said vehicle and discharged into a receptacle external to said vehicle, said fluid exchange system comprising:

a first fluid line fluidly coupling the fluid exchange system, the source, the fluid cooling circuit, and transmission dipstick filler tube to conduct fresh fluid from the source into both the fluid cooling circuit and the dipstick filler tube, said conducted fresh fluid having a first fluid flow rate;

a second fluid line interconnected to the fluid exchange system and the vehicle to conduct the used fluid from the vehicle, said used fluid having a second fluid flow rate; and

a control assembly operatively coupled to the first fluid line or the second fluid line to substantially balance the first fluid flow rate with the second fluid flow rate during an exchange procedure.

US 6,330,935 B1

MAINTENANCE METHOD FOR AN ELEVATOR INSTALLATION AND ELEVATOR INSTALLATION

Ralf Systermans, Letter, Germany, assignor to Kone Corporation, Helsinki, Finland

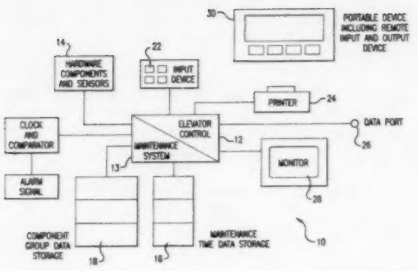
Continuation of application No. PCT/DE99/00085, filed on Jan. 11, 1999. This application Jul. 7, 2000, Appl. No. 612,241.

Claims priority, application Germany, Jan. 9, 1998, 198 00 714

Int. Cl. B66B *3/00*

U.S. Cl. 187—391 **23 Claims**

1. A method for maintaining an elevator system with at least a data-storage exhibiting maintenance system, the method comprising:



combining the hardware components with similar maintenance needs or the spatially and/or technically connected hardware components of the elevator into groups;

assigning the different groups specific maintenance time-points so that a group specific maintenance plan is rendered in a data storage of the maintenance system for an elevator.

US 6,330,936 B1

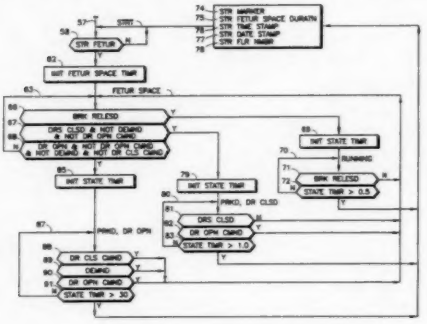
ELEVATOR BEHAVIOR REPORTED IN OCCURRENCE-RELATED GROUPS

Juan A. Lence Barreiro, Santiago de Compostela, Spain; Harry Z. Huang, Plainville, Conn.; Chouhwan Moon, Glastonbury, Conn.; Gary L. Freeland, Plainville, Conn., and Robert H. Mashiak, Somers, Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed May 9, 2000, Appl. No. 567,845

Int. Cl. B66B *3/00*

U.S. Cl. 187—393 **23 Claims**



1. A method of monitoring and recording information useful in servicing an elevator having a brake, including maintenance and repair, comprising:

(a) determining, from elevator operational parameters, including events and conditions, the occurrence of events or conditions which constitute notable features having significance with respect to elevator performance, and in response to each occurrence of any of said notable features, providing a corresponding feature signal;

(b) in response to each said feature signal, storing a corresponding manifestation of said notable feature in a chronological log;

(c) determining, from elevator operational parameters, an elevator operational event or condition which signifies the end of an elevator operational sequence within which said notable features may be related to a common causation, and generating a separation marker signal in response thereto; and

(d) responsive to said separation marker signal, storing a separation marker manifestation chronologically in said log, said separation marker manifestation separating notable features previously recorded in said log from notable features recorded in said log subsequent to recording said separation marker manifestation therein.

US 6,330,937 B1

WHEEL HUB AND BRAKE DISC ARRANGEMENT FOR HEAVY VEHICLES

Ingemar Dagh, Gothenburg, and Anders Carlsson, Torslanda, both of Sweden, assignors to Volvo Lastvagnar AB, Gothenburg, Sweden

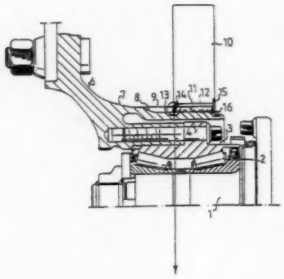
PCT No. PCT/SE99/01323, § 371 Date Mar. 15, 2001, § 102(e) Date Mar. 15, 2001, PCT Pub. No. WO00/06922, PCT Pub. Date Feb. 10, 2000

PCT Filed Jul. 28, 1999, Appl. No. 744,745

Claims priority, application Sweden, Jul. 28, 1998, 9802634

Int. Cl. B60T *1/06*

U.S. Cl. 188—18 A **5 Claims**



1. Wheel hub and brake disc device for a vehicle wheel, comprising a hub portion (**7**) mounted via bearing means (**2**) on an axle end (**1**), said hub portion having a cylindrical neck portion (**7**) with alternating axial grooves (**8**) and bars (**9**), a brake disc (**10**) having a central opening with corresponding grooves (**11**) and bars (**12**), engaging the bars (**9**) and grooves (**8**) in the neck portion to fix rotationally the brake disc on the hub portion, and an open retainer ring (**14**), held in a peripheral groove (**13**) in the neck portion for axially fixing the brake disc in one direction on the hub portion, characterized in that the retainer ring (**14**) has end portions facing each other, of which at least one (**17**) is bent radially inwards and extends into a recess (**8**) in the neck portion (**7**) to fix rotationally the retainer ring on the neck portion.

US 6,330,938 B1

METHOD AND DEVICE FOR CONTROLLING AN ELECTRIC ACTUATOR ACTIVATING A FUNCTIONAL SYSTEM

Perrault Hĕrvé, Paris, and Goly Fabrice, Eragny/Oise, both of France, assignors to Automobile, Peugeot, Paris, and Automobiles Citroen, Neuilly, both of France

PCT No. PCT/FR99/01430, § 371 Date Mar. 29, 2000, § 102(e) Date Mar. 29, 2000, PCT Pub. No. WO99/65744, PCT Pub. Date Dec. 23, 1999

PCT Filed Jun. 15, 1999, Appl. No. 485,226

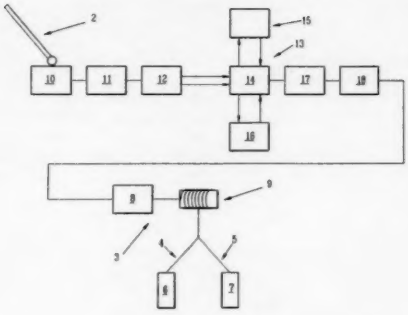
Claims priority, application France, Jun. 15, 1998, 98 07524

Int. Cl. B60L *7/00*

U.S. Cl. 188—158 **9 Claims**

1. Process for controlling an electric actuator comprising:

a control member actuatable by a user so as to govern the powering of the actuator, the process comprising the following steps:



a) the movements of the control member are estimated, in terms of direction and amplitude, along a travel thereof between extreme positions of control of the actuator, control for powering the actuator is gauged with each passage to the extreme position of the travel of the control member,

b) these movements are analyzed so as to derive therefrom a cue for controlling means for powering the actuator so as to supply to the latter a quantity of current corresponding to the movement of the control member, as determined on the basis of a predetermined correspondence law and of means for aggregating the successive movements of the actuator during its various controls, and updated after each new control thereof, so as to slave the position of the actuator to the position of the control member.

US 6,330,939 B1

DEVICE AND METHOD FOR DETERMINING THE AUTHENTICITY OF DOCUMENTS

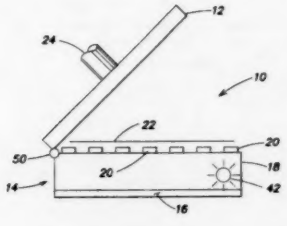
George W. Pratt, 67 Glezen La., Wayland, Mass. 01778

Continuation-in-part of application No. 08/748,819, filed on Nov. 14, 1996, now Pat. No. 5,899,313. This application May 4, 1999, Appl. No. 304,813.

This patent is subject to a terminal disclaimer.

Int. Cl. G07D *7/02*

U.S. Cl. 194—206 **30 Claims**



1. A method of determining the authenticity of a document having a known permittivity, said method comprising the steps of:

sensing complex electric permittivity of the document based on frequency dependent dielectric properties of the document using a plurality of interdigitated electrodes arranged substantially in a plane and electrically excited by a sensing circuit, wherein the document is positioned against the interdigitated electrodes;

providing an output corresponding to the sensed permittivity; and

processing the output to provide an indication regarding whether or not the document is genuine.

US 6,330,940 B1

CONVEYOR

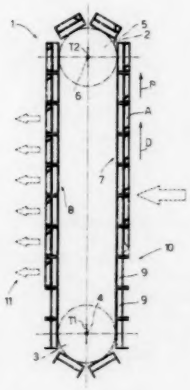
Mario Spatafora, Bologna, Italy, assignor to G.D Societa' per Azioni, Bologna, Italy

Filed Dec. 28, 1999, Appl. No. 473,842

Claims priority, application Italy, Jan. 11, 1999, BO99A0008

Int. Cl. B65G *15/26*

U.S. Cl. 198—594 **23 Claims**



1. A conveyor for transferring products (A) and comprising a flexible member (**2**) looped about at least a first and a second pulley (**3**, **5**) and in turn having at least a first (**7**) and a second (**8**) conveying branch, said first branch (**7**) extending between said first and said second pulley (**3**, **5**) in a given direction (D); and an actuating device (**12**) for activating said first and said second pulley (**3**, **5**) to impart to the first and the second pulley (**3**, **5**) a concordant reciprocating motion in said direction (D) according to a first law of motion (LM1); said flexible member (**2**) being fed about said first and said second pulley (**3**, **5**), according to a second law of motion (LM2); wherein said second law of motion (LM1, LM2) being so determined that said first branch (**7**) is operated intermittently, and said second branch (**8**) is operated continuously and uniformly, and said actuating device (**12**) comprises balance masses (M, M/2) to balance inertia forces developed in said actuating device when producing the movements of said branches in accordance with said first and second laws.

US 6,330,941 B1

RADIUS CONVEYOR BELT

Dieter Guldenfels, Pfeffingen, Switzerland, assignor to Habasit AG, Switzerland

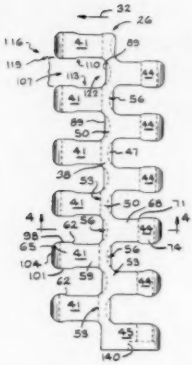
Filed May 25, 2000, Appl. No. 579,090

Int. Cl. B65G *17/06*

U.S. Cl. 198—853 **25 Claims**

1. A belt module, which comprises:

a) an intermediate section having opposed first and second walls, wherein the intermediate section has an intermediate width defined by the first and second walls and a thickness defined by an upper surface and a lower surface and wherein the intermediate section comprises a web portion extending across the intermediate width between the first and second walls and from one of the upper and lower surfaces to a portion of the way through the thickness of the intermediate section to form into a corrugated portion extending across the intermediate width between the first and second walls to the other of the upper and lower surfaces, wherein the corrugated portion has a sinusoidal shape comprising a series of regularly spaced ridges and valleys extending substantially across a lateral width of the module;



b) a first plurality of link ends extending outwardly from the intermediate section including the web portion and being connected to the regularly spaced ridges of the first wall of the corrugated portion;

c) a second plurality of link ends extending outwardly from the intermediate section including the web portion and being connected to the regularly spaced ridges of the second wall of the corrugated portion and in a direction opposite the first link ends; and

d) transverse openings provided in each of the first and second link ends.

US 6,330,942 B1

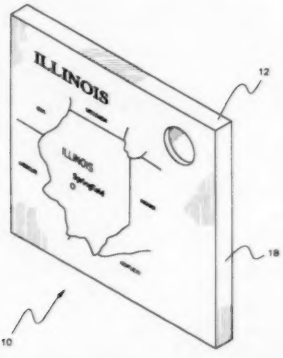
COIN COLLECTING CARD AND INFORMATION RELATING THERETO

June K. Raymond, 5023 N. River Rd., Schiller Park, Ill. 60176

Filed May 12, 2000, Appl. No. 569,618

Int. Cl. B65D *85/00*; **G09B** *29/00*

U.S. Cl. 206—0.84 **9 Claims**



1. A coin collecting card and information relating thereto, said card comprising:

at least one plate, plate comprising:

a front side, a back side and a peripheral edge;

a first indicia being located on said front side of said plate, said first indicia indicating a map of a region representing the coin;

a well, said well extending into said front side of said plate, said well having a shape adapted for removably receiving a respective coin from said region; and

wherein said plate is a plurality of plates, each of said plates further comprising:

a second indicia being located on said back side of said plate, said second indicia indicating regional information respective to said region indicated by said first indicia.

5. A coin collecting card and state information relating thereto, said card comprising:

a plurality of plates, each of said plates comprising:

a front side, a back side and a peripheral edge, said front and back sides having a generally rectangular shape, each of said plates comprising a cardboard material, each of said plates having a length substantially equal to 4 inches, a width substantially equal to 3 inches and a height generally less than ½ inch;

a first indicia being located on said front side of said plate, said first indicia indicating a map of a United States state;

a second indicia being located on said back side of said plate, said second indicia indicating state information respective to said state indicated by said first indicia;

an annular well, said annular well extending into said front side of said plate, said annular well having a shape adapted for removably receiving a United States twenty-five cent piece such that said twenty-five cent piece is generally flush with a surface of said front side; and

said plurality of plates being a plate for each state of the United States, wherein each of said plates has indicia thereon indicative of a state of the United States.

6. A coin collecting card and information relating thereto, said card comprising:

a plurality of plates, each plate having a front side, a back side and a peripheral edge;

a first indicia being marked on the front side of each of said plates, said first indicia indicating a map of a region representing the coin;

a well extending into the front side of each of said plates, said well having a shape adapted for removably receiving a coin; and

a second indicia being marked on the back side of each of said plates, said second indicia indicating regional information corresponding to said region indicated by said first indicia.

US 6,330,943 B1

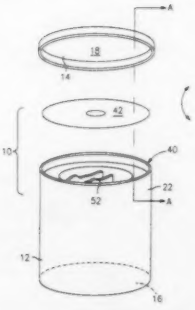
PACKAGING DEVICE FOR DISC-SHAPED ITEMS AND RELATED MATERIALS AND METHOD FOR PACKAGING SUCH DISCS AND MATERIAL

Alexandra Gordon, 115 The Farms Rd., Bedford, N.Y. 10506, and Charles W. Grimes, 55 Allwood Rd., Darien, Conn. 06820

Division of application No. 09/161,064, filed on Sep. 25, 1998, now Pat. No. 6,216,857. This application Jul. 28, 2000, Appl. No. 627,594.

Int. Cl. B65D *85/57*

U.S. Cl. 206—232 **43 Claims**



1. A packaging device comprising:

a container including an inside wall and a first opening;

support means mounted about said first opening, said inside wall and said support means defining a first chamber adjacent to said first opening for packaging therein a disc-shaped media and a second chamber remote from said first opening for packaging therein said materials other than said disc-shaped media;

said support means including shelf means adapted to engage one side of said disc-shaped media about the outer perimeter of said disc-shaped media so as to prevent movement of said disc-shaped media in a first direction perpendicular to the plane of said disc-shaped media and toward said shelf means and said second chamber, wherein said shelf means is co-planar with said disc-shaped media;

means for preventing movement of said disc-shaped media in a direction parallel to the plane of said disc-shaped media;

means for preventing movement of said disc-shaped media in a second direction perpendicular to the plane of said disc-shaped media, said second direction being opposite said first direction and away from said shelf means; and

means for closing said first opening.

18. A device for packaging at least one disc-shaped media and other materials comprising:

a container including an inside wall and a first opening;

support means mounted about said first opening, said inside wall and said support means defining a first chamber adjacent to and on one side of said support means and a second chamber adjacent to and on the opposite side of said support means;

said support means including shelf means adapted to engage the outer perimeter of said disc-shaped media so as to prevent movement in a first direction perpendicular to the plane of said disc-shaped media, wherein said shelf means is co-planar with said disc-shaped media;

abutment means adapted to engage the edge of said disc-shaped media so as to prevent movement in the plane of said disc-shaped media;

means for preventing movement of said disc-shaped media in a second direction perpendicular to said disc-shaped media, said second direction being opposite said first direction; and

means for closing said first opening.

36. A method for packaging disc-shaped media together with other material, said method comprising the steps of:

providing a device for packaging at least one disc-shaped media and other materials comprising:

a container including an inside wall and a first opening;

support means mounted about said first opening, said inside wall and said support means defining a first chamber adjacent to and on one side of said support means and a second chamber adjacent to and on the opposite side of said support means;

said support means includes a continuous annular shelf adapted to engage the outer perimeter of said disc-shaped media so as to prevent movement in a first direction perpendicular to the plane of said disc-shaped media;

abutment means adapted to engage the edge of said disc-shaped media so as to prevent movement in the plane of said disc-shaped media; and

a removable lid for closing said first opening, said lid further preventing movement of said disc-shaped media in a second direction perpendicular to said disc-shaped media, said second direction being opposite said first direction;

inserting said other material into said second chamber through said first opening and through the opening of said annular shelf;

inserting said disc-shaped media into said container through said first opening, onto said support means such that the perimeter of said disc-shaped media is supported by said continuous annular shelf and the edge of said disc-shaped media is bounded by said abutment means;

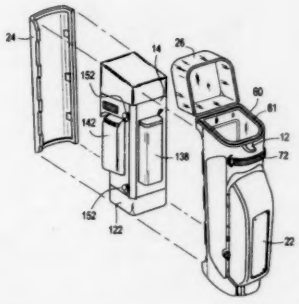
attaching said lid to said container.

US 6,330,944 B1

MULTI-FUNCTION GOLF BAG

Christopher J. DeMichele, 380 Wilson Ave., Township of Washington, N.J. 07675

Filed Oct. 8, 1997, Appl. No. 947,036
Int. Cl. A63B *55/00*
U.S. Cl. 206—315.3 **9 Claims**



1. A multi-function golf bag comprising:

an outer bag of a rigid material, the outer bag including an elongated body portion having a closed lower end, an open upper end, and at least first and second sides with an access opening through at least one of the sides;

at least one inner bag of a soft material, said one inner bag being adapted to nest within the outer bag with said one inner bag functioning as a containment system for golf clubs and accessories, the access opening being dimensioned to allow said one inner bag to be removed from the outer bag through the access opening for use as a functional golf bag; and

a lid of a rigid material mounted on the upper end of the outer bag for closing the upper end to enable the outer bag to function as a protective and decorative enclosure for said one inner bag, the lid being removably mounted on the upper end for enabling the lid to be removed from the body portion to provide access to said one inner bag through the open upper end, allowing the outer bag to be used as a functional golf bag, wherein said one inner bag includes a plurality of dividers which extend substantially the full length of the sides of the outer bag, and the inner bag being removable from the outer bag for use as a functional golf bag having substantially full length club dividers.

US 6,330,945 B1

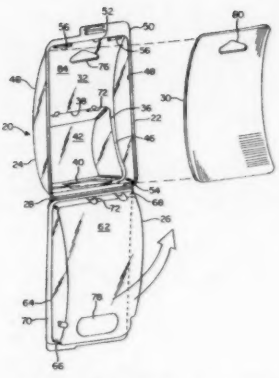
CLAMSHELL PACKAGE WITH CURVED CARD

Joe Reimer, Oregon, Wis., assignor to Placon Corporation, Madison, Wis.

Filed Jun. 30, 2000, Appl. No. 607,765
Int. Cl. B65D *73/00*
U.S. Cl. 206—470 **3 Claims**

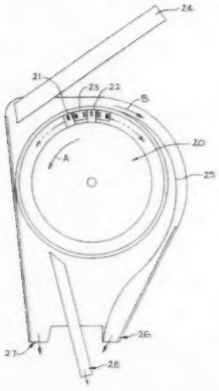
1. A package comprising:

a thermoformed plastic blister having a cover pivotally connected by a hinge to a base, wherein the cover has a curved rearwardly opening front wall, and wherein a cover skirt extends rearwardly from the cover front wall, and wherein a product bubble protrudes frontwardly from the cover front wall, the product bubble having a front face, and a bubble top wall extends between the cover front wall and the bubble front face, and beneath the bubble top wall, a bubble bottom wall extends between the cover front wall and the bubble front face, the forward extension of the bubble top wall being less than the forward extension of the bubble bottom wall, and wherein the base has a curved rearwardly opening base front wall of approximately the same curvature as the cover front wall; and



a card clasped between the cover front wall and the base front wall when the base is pivoted about the hinge to close the package, the card being conformed to a curvature approximately matching that of the cover front wall by being clasped between the curved cover front wall and the curved base front wall.

US 6,330,946 B1
APPARATUS AND METHOD FOR SEPARATING PARTICLES
Neil Robert Allen, Tasmania, Australia, assignor to KA PTY Ltd., Tasmania, Australia
PCT No. PCT/AU97/00496, § 371 Date Feb. 8, 1999, § 102(e) Date Feb. 8, 1999, PCT Pub. No. WO98/06500, PCT Pub. Date Feb. 19, 1998
PCT Filed Aug. 6, 1997, Appl. No. 242,102
Claims priority, application Australia, Aug. 8, 1996, PO 1495
Int. Cl. B03C *1/247*
U.S. Cl. 209—219 **38 Claims**



1. A method for separating particles such as minerals from a mixture including said particles, said method comprising the steps of:

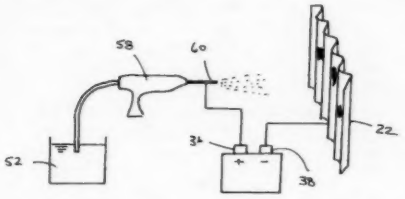
generating a rotating magnetic field;

exposing said mixture to said rotating magnetic field so that a plurality of susceptible particles may be caused to rotate;

adjusting said rotating magnetic field to cause a rotation of a subgroup of said susceptible particles; and

exploiting the rotation of said subgroup of susceptible particles to separate the subgroup of particles at least from other susceptible particles included in the mixture that do not rotate.

US 6,330,947 B1
METHOD OF MANUFACTURING A FILTER
Robin Scott, Anaheim, Calif., assignor to Ultra-Sun Technologies, Inc, Anaheim, Calif.
Division of application No. 09/281,011, filed on Mar. 30, 1999, now Pat. No. 6,248,235. This application Jul. 7, 2000, Appl. No. 611,601.
Int. Cl. C02F *1/32*
U.S. Cl. 210—506 **14 Claims**



1. A method of manufacturing a filter for decomposing organic components within a fluid as electromagnetic radiation is emitted from an electromagnetic radiation source onto said filter, said filter comprising a substrate and an oxidation catalyst suspended on said substrate, said substrate being formed from a transition metal and adapted to be positioned within a flow of a fluid without substantially impeding said flow, said catalyst comprising a mixture of nanophase metal oxide and microphase metal oxide, said mixture formed by adding together a substantially nanophase component of metal oxide and a substantially microphase component of metal oxide, said mixture comprising at least 30% said nanophase metal oxide, said catalyst having the property of accelerating the oxidation of said organic components when said catalyst is exposed to said electromagnetic radiation, said method comprising the steps of:

mixing said oxidation catalyst with water to form a solution;

providing ultrasonic energy to said solution;

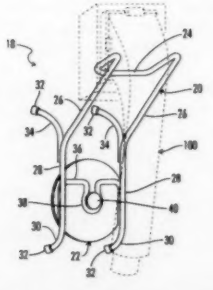
adding a wetting agent to said solution;

adding a polar solvent to said solution;

spraying said solution onto said substrate; and

baking said, substrate at a temperature greater than 150° F.

US 6,330,948 B1
STABLE RACK FOR DISH WASHING SCRUBBERS
Alfonso Leto, 1602 Hatfield Dr., Franklin, Tenn. 37064
Filed Sep. 21, 1999, Appl. No. 400,045
Int. Cl. A47F *7/00*
U.S. Cl. 211—70.6 **4 Claims**



4. A rack for holding a dish washing scrubber sized and shaped for use in a sink having a horizontal peripheral flange and walls depending therefrom defining a basin, the rack comprising:

a frame having a scrubber side and an attachment side;

a cradle disposed on said scrubber side having upwardly extending parallel arms connected by a crossbar, said cradle adapted for holding said scrubber;

a suction cup disposed on said attachment side of said frame capable of attaching said rack to said wall of said sink;

at least one arm extending substantially orthogonally from said attachment side of said frame above said suction cup, said at least one arm adapted for suspending said rack from said flange of said sink when said rack is attached to said wall thereof;

at least one stabilizer foot disposed on said attachment side of said frame below said suction cup, said stabilizer foot capable of abutting said wall of said sink to stabilize said rack when said rack is attached to said wall.

US 6,330,949 B1

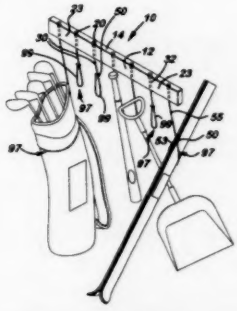
HANGER STORAGE SYSTEM

David T. DeRisio, 221 E. 44th, Boise, Id. 83714

Provisional application No. 60/079,687, filed on Mar. 26, 1998. This application Mar. 26, 1999, Appl. No. 277,479.

Int. Cl. A47F *7/00*

U.S. Cl. 211—85.7 **8 Claims**



5. A hanger system comprising a hanger and a suspended object hung from the hanger, the hanger comprising:

an elongated support member having a longitudinal axis, and a top surface and a bottom surface perpendicular to the longitudinal axis;

a cord hanging from the support member, the cord having a proximal end connected to the support member, a middle region, and a distal end;

a cleat on the distal end of said cord, the cleat comprising:

a plate with a central region, a first end region and a second end region, and a length between the first end region and second end region;

generally parallel and opposing first and second planar surfaces and a thickness between the first and second planar surfaces;

two exterior perimeter side surfaces perpendicular to the first and second planar surfaces, and a width between said side surfaces normal to the length and normal to the thickness;

each of the two sides surfaces having a 80–100 degree V-shaped notch near the central region of the cleat between the first and second end regions and having an exterior perimeter edge in the V-shaped notch; and

the second end region having a hole through the cleat from the first surface to the second surface and hole interior surface surrounding and defining the hole; and

the hanger further comprising:

the cord distal end secured to the first end region of the cleat, the cord middle region slidably passing through the hole in the second end region of the cleat, and the cord between the distal end and the middle region of the cord forming an open loop distanced from the cleat and having an interior space; and

the cleat having 90 degree angles between said first planar surface, said second planar surface, and said hole interior surface, said angles providing sharp corners to bite into the cord to anchor the distal end of the cord relative to the middle portion of the cord, thereby establishing and maintaining said loop;

wherein said suspended object is received inside the interior space of the open loop, the open loop is tightened around said suspended object, the V-shaped notch receives said suspended object and the exterior perimeter edge frictionally grips said suspended object.

US 6,330,950 B1

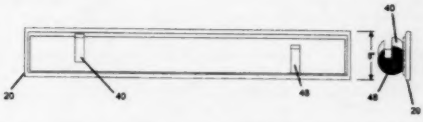
HOCKEY STICK MOUNTING ASSEMBLY

Steve Loika, 1240 Highway F, Defiance, Mo. 63341

Filed Sep. 19, 2000, Appl. No. 665,022

Int. Cl. A47F *7/00*

U.S. Cl. 211—85.7 **13 Claims**



1. A special purpose plaque for displaying a standard hockey stick comprising:

a plaque;

at least two simulated or authentic hockey pucks, each puck having a generally cylindrical external surface including an upper surface containing a slot extending downwardly into said puck;

means for attaching to said plaque said at least two simulated or authentic hocky pucks at a laterally spaced apart location on said plaque, said pucks having means for supporting at least one hockey stick.

US 6,330,951 B1

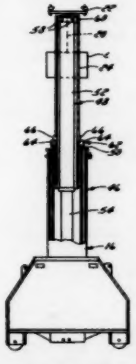
HYDRAULIC BOOM FOR GANTRY OR THE LIKE

Roger L. Johnston, Muskego, Wis., assignor to J&R Engineering Company, Inc., Mukwanago, Wis.

Division of application No. 07/971,333, filed on Nov. 4, 1992, now Pat. No. 5,865,327, which is a continuation-in-part of application No. 07/887,232, filed on May 19, 1992, now abandoned, which is a continuation of application No. 07/426,597, filed on Oct. 24, 1989, now abandoned. This application Feb. 2, 1999, Appl. No. 243,042.

Int. Cl. B66C *17/00;5/04*

U.S. Cl. 212—270 **2 Claims**



1. In a gantry including first and second extendible leg assemblies and a beam extending between and supported on said extendible leg assemblies, each said extendible leg assembly comprising: a base; a plurality of telescoping sections, each having an upper end and a lower end, mounted on said base for vertical extension relative to said base, said plurality including an innermost section, an outermost section and an intermediate section immediately

adjacent said innermost section; a hydraulic cylinder having a cylinder end and a rod end, disposed within said telescoping sections with said cylinder end uppermost and said rod end lowermost, said cylinder end having a coupling device being coupleable with and decoupleable from said innermost section, a detachable connection for detachably coupling said cylinder end to said adjacent intermediate section so that said cylinder end can be coupled to either said innermost section or to said adjacent intermediate section; and a selectively engageable connection between said lower end of said innermost section and said upper end of said adjacent intermediate section for detachably fixing said innermost section and said adjacent intermediate section to each other with said innermost section being extended relative to said adjacent intermediate section; said extendible leg assembly thereby being extendible over a range that is greater than the available extension of said cylinder, wherein said detachable connection includes coaxially alignable holes formed in said cylinder end and said intermediate section and further includes a pin insertable through said holes in said cylinder end and said intermediate section when said holes in said cylinder end and said intermediate section are coaxially aligned holes, a method comprising:

(A) supporting a first end of said beam on said innermost section of said first extendible lift assembly;

(B) supporting a second end of said beam on said innermost section of said second extendible lift assembly;

(C) supporting said load on said beam and coupling said hydraulic cylinders to said innermost sections; then

(D) while said load is supported on said beam, extending said hydraulic cylinders to extend said innermost section of each of said lift assemblies relative to said intermediate section and said base of each of said lift assemblies, thereby lifting said load to a first height; then

(E) while said load is supported on said beam and said innermost section of each of said lift assemblies is extended relative to said intermediate section, detachably securing said innermost section of each of said lift assemblies to said intermediate section of each of said lift assemblies so as to at least substantially prevent downward movement of said innermost section of each of said lift assemblies relative to said intermediate section of each of said lift assemblies, the detachably securing step comprising, for each of said lift assemblies, detachably fixing said lower end of said innermost section to said upper end of said intermediate section using said detachably engageable connection; then

(F) while said load is supported on said beam, decoupling said hydraulic cylinders from said innermost sections, retracting said hydraulic cylinders, and detachably connecting said hydraulic cylinder of each of said lift assemblies to said intermediate section of each of said lift assemblies using said detachable connection; and then

(G) while said load is supported on said beam, extending said hydraulic cylinders to extend said innermost and intermediate sections of each of said lift assemblies relative to said base of each of said lift assemblies, thereby lifting said load to a second height which is higher than said first height, wherein the steps (D) and (G), in combination, lift said load through a range which is greater than a maximum range of extension of said hydraulic cylinders.

US 6,330,952 B2

SHOCK ABSORBING TOW BAR FOR TROLLEY-TYPE CONVEYOR SYSTEMS

Gareth D. Summa, Denver, and N. Duane Smith, Kansas City, both of Mo., assignors to Conveyor Technology Group Inc., Kansas City, Mo.

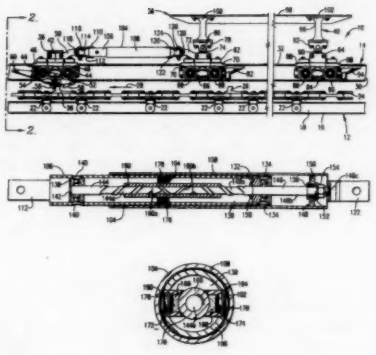
Division of application No. 09/832,400, filed on Apr. 11, 2001, which is a continuation of application No. 09/404,899, filed on Sep. 24, 1999, now Pat. No. 6,244,451. This application Jul. 2, 2001, Appl. No. 681,976.

Int. Cl. B61B *12/00*

U.S. Cl. 213—62 R **54 Claims**

13. A load carrier for a conveyor system, said load carrier comprising:

a drive unit;



a load-supporting unit in trailing relationship with the drive unit; and

a shock absorbing tow bar for connecting the load-supporting unit to the drive unit, said shock absorbing tow bar extending between the load-supporting unit and the drive unit in an impact direction, said tow bar including

a first component connected to one of the units,

a second component including a braking surface that translates in the impact direction during cushioning movements;

a third component connectable to the other one of the units;

said first component telescopically received for longitudinal movement in the third component during cushioning movements,

said second component positioned at least partly in the first component; and

a brake fixed to the first component and frictionally engaging the braking surface to thereby restrict translational movements of the second component relative to the first component during relative movements of the first and third components during cushioning movements.

US 6,330,953 B2

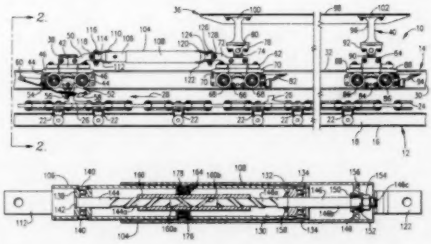
SHOCK ABSORBING TOW BAR FOR TROLLEY-TYPE CONVEYOR SYSTEMS

Gareth D. Summa, Denver, and N. Duane Smith, Kansas City, both of Mo., assignors to Conveyor Technology Group Inc., Kansas City, Kans.

Continuation of application No. 09/404,899, filed on Sep. 24, 1999, now Pat. No. 6,244,451. This application Apr. 11, 2001, Appl. No. 832,400.

Int. Cl. B61G *9/00*

U.S. Cl. 213—62 R **22 Claims**



5. A load carrier for a conveyor system, said carrier comprising:

a drive unit;

a load-supporting unit in trailing relationship with the drive unit; and

a shock absorbing tow bar connecting the load-supporting unit to the drive unit, said tow bar including

first and second components being interconnected so as to permit limited relative shifting therebetween,

said first component being connected to the drive unit, and said second component being connected to the load-supporting unit,

said first component including a first threaded member, and said second component including a second threaded member, and

a third threaded member threadably engaging the first and second threaded members,

said threaded members being arranged so that relative shifting of the components causes rotation of the third threaded member, thereby cushioning movement between the drive and load-supporting units.

US 6,330,954 B1

CAN END WITH EMBOSS AND DEBOSS SCORE PANEL STIFFENING BEADS

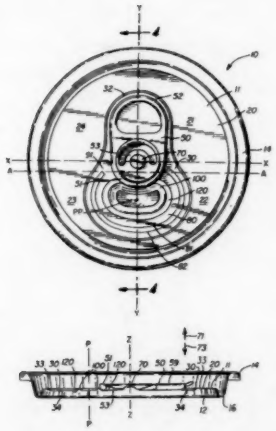
Tim L. Turner, Cary, Ill., and Robert L. Hurst, Golden, Colo., assignors to Rexam Beverage Can Company, Chicago, Ill.

Continuation of application No. 09/019,920, filed on Feb. 6, 1998, which is a continuation of application No. 08/593,035, filed on Feb. 23, 1996, now Pat. No. 5,715,964. This application Aug. 20, 1999, Appl. No. 378,066.

This patent is subject to a terminal disclaimer.

Int. Cl. B65D *17/32*

U.S. Cl. 220—269 **15 Claims**



1. A can end for a two-piece beverage can, comprising: a generally flat radially extending portion;

a score panel defined in said generally flat radially extending portion by an arcuate score; said score panel having a central longitudinal axis projecting in a first axial direction normal to said generally flat radially extending portion and a second axial direction opposite to said first axial direction; and,

a depression formed in said score panel and projecting in said second axial direction, a pull tab attached to said generally flat radially extending portion, said pull tab residing in a resting state without user lifting force applied, and having a nose portion position in overlying relationship with a portion of said depression and said nose portion being engaged with a portion of said depression.

US 6,330,955 B2

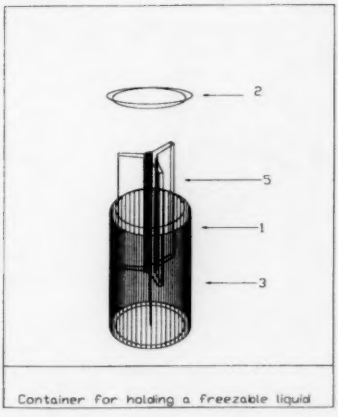
REUSABLE ICE SUBSTITUTE IN A CAR

Vincent Michael Easler, Sr., 904 Sunnyside Dr., West Mifflin, Pa. 15122

Filed Jan. 5, 2000, Appl. No. 477,634

Int. Cl. B65D *25/04*

U.S. Cl. 220—507 **6 Claims**



1. An energy storage device for use in temporary refrigeration and cooling applications, said device comprising:

a cylindrical metal container;

a freezable material placed within said container;

a compressible means placed within said container such that the compressible means protects the container from the expansion of the freezable material;

where the compressible means is comprised of a foam;

a lid suitably adapted to close and seal said container.

US 6,330,956 B1

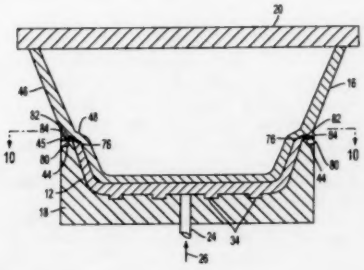
MOLDED PLASTIC PET BOWL

Jonathan Willinger, East Rutherford, N.J., assignor to J.W. Pet Company, Hasbrouck Heights, N.J.

Filed Dec. 9, 1998, Appl. No. 208,087

Int. Cl. B65D *1/48*

U.S. Cl. 220—574 **11 Claims**



1. A molded bowl assembly comprising:

a molded bowl; and

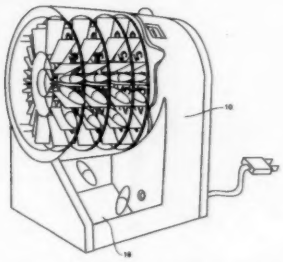
a base molded around a lower portion of said molded bowl;

whereas said molded bowl comprises an upper portion and a lower portion, a junction formed in-between, and wherein said molded base terminates at said junction;

said bowl further comprising a ledge formed along said junction and wherein said ledge comprises a ridge overhanging said

lower portion, and a plurality of recesses spaced circumferentially about said ledge.

US 6,330,957 B1
AUTOMATIC MEDICATION DISPENSER
Daryl L. Bell-Greenstreet, 745 W. Paraiso Pl., Green Valley, Ariz. 85614
Filed Dec. 15, 1998, Appl. No. 212,647
Int. Cl. G07F *11/00*
U.S. Cl. 221—3 **10 Claims**



1. A device for the automatic distribution of medication comprising:

a) at least one removable medication cassette;

b) a housing which receives the at least one medication cassette, the at least one medication cassette being rotatable within the housing;

c) a medication exit slot in the housing which allows medication contained by the at least one medication cassette to be distributed from the at least one medication cassette;

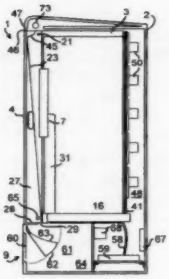
d) a drive system contained by the housing which rotates the at least one medication cassette within the housing and

e) a medication detector which is contained by the housing and detects the distribution of the medication,

whereby when the medication detector detects the medication an alarm is triggered; and

wherein each of the at least one medication cassette further comprises a backing plate with a centrally located, cam-shaped aperture having a cam-shaped edge, a cam-shaped partition located along the cam-shaped edge and projecting perpendicularly from backing plate, a circularly shaped partition that is co-axial with the cam-shaped aperture and also projects perpendicularly to the backing plate, and a plurality perpendicularly mounted fins extending radially from the center of the backing plate, whereby compartments are formed between each adjacent pair of the plurality of perpendicularly mounted fins.

US 6,330,958 B1
COMPACT TABLE-TOP VENDING MACHINE
Frank Ruskin, 225 W. 38th St., Los Angeles, Calif. 90037; Anton K. Simson, 14530 Espola Rd., Suite A, Poway, Calif. 92064; Peter C. Brusso, 807 S. Songbird, Anaheim Hills, Calif. 92808; Henri J. A. Charmasson, 2030 Sunset Blvd., San Diego, Calif. 92013, and John D. Buchaca, 4646 Judson Way, La Mesa, Calif. 91941
Continuation-in-part of application No. PCT/US98/08064, filed on Apr. 15, 1998, which is a continuation-in-part of application No. 08/844,767, filed on Apr. 22, 1997, now abandoned, Provisional application No. 60/104,006, filed on Oct. 13, 1998. This application Oct. 8, 1999, Appl. No. 414,910.
Int. Cl. G07F *11/00*
U.S. Cl. 221—75 **37 Claims**



1. A vending machine which comprises:

a housing cabinet having a good dispensing opening;

a detachable and replaceable magazine having a plurality of stations, each holding a plurality of goods and means for dispensing said goods therefrom;

means housed outside said magazine for driving said means for dispensing;

means for selectively activating one of said means for driving;

a control mechanism, housed within said cabinet, including;

means for selecting one of said stations;

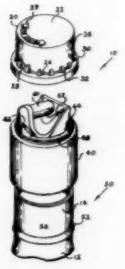
means, responsive to said means for selecting, for controlling said means for selectively activating one of said means for driving; and

wherein said magazine comprises a box having a closable front and a back panel;

each of said good-holding stations comprises one of said means for dispensing goods; and

said stations are distributed over a plurality of layers, wherein each layer comprises a plurality of side-by-side positioned stations.

US 6,330,959 B1
TAMPER EVIDENT CLOSURE
Richard C. G. Dark, 2248 Gum Tree La., Fallbrook, Calif. 92028
Filed Sep. 7, 2000, Appl. No. 657,238
Int. Cl. B67B *5/00*
U.S. Cl. 222—153.1 **7 Claims**



1. A tamper evident closure for a container, the tamper evident closure comprising:

a closure overcap having a top wall portion and a generally cylindrical skirt portion depending therefrom, the skirt portion terminating in an overcap terminal edge, the overcap terminal edge being planar except for an indented portion extending upwardly towards the top wall portion;

a tamper evident band connected to the skirt portion by a plurality of fragmentable webs, the tamper evident band having an inwardly directed flange;

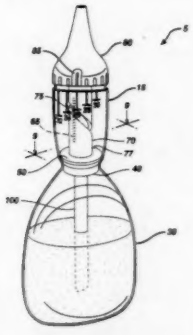
a dispensing cap having a dispensing orifice surrounded by an annular cap shoulder upper surface, the annular cap shoulder upper surface conforming to the overcap terminal edge, and including an upwardly extending cam conforming to the indented portion when aligned therewith;

an annular snap groove formed in the dispensing cap beneath the annular cap shoulder upper surface, the annular snap groove being disposed in a plane that is parallel with a plane passing through the annular cap shoulder upper surface, the annular

snap groove receiving and frictionally engaging the inwardly directed flange of the tamper evident band when the overcap terminal edge seats against the annular cap shoulder upper surface; and

whereby twisting the closure overcap when it is attached to the dispensing cap causes the upwardly extending cam to push the overcap terminal edge away from the annular cap shoulder upper surface, thereby breaking the plurality of fragmentable webs one at a time.

US 6,330,960 B1
SQUEEZE DISPENSER
Michael Faughey, Harleysville, Pa., and John Lonczak, Newburgh, N.Y., assignors to McNeil-PPC, Inc., Skillman, N.J.
Filed Jun. 4, 1999, Appl. No. 325,868
Int. Cl. B67B *5/06*
U.S. Cl. 222—205 **16 Claims**



1. A container for dispensing liquids, said container comprising:

a. a lower reservoir and an upper reservoir separated by a gasket, said gasket having an aperture therethrough and comprising an inner sleeve drain;

b. a longitudinal tube extending through said gasket, said tube having a lower end extending into said lower reservoir, and an upper end extending into said upper reservoir, whereby when pressure is applied to said lower reservoir, liquid in said lower reservoir can travel through said tube and into said upper reservoir, said upper end of said tube having a longitudinal slot extending therethrough;

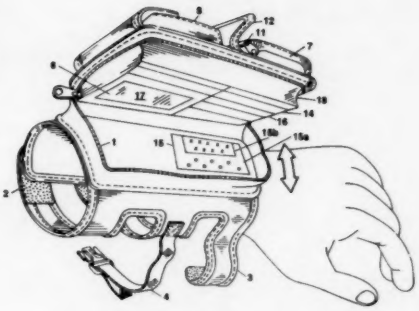
c. a dispensing tip having a longitudinal sleeve extending therefrom, said longitudinal sleeve having a helical slit extending therethrough and comprising a base comprising an outer sleeve drain, said sleeve being disposed concentrically around said upper end of said tube such that it can rotate around said tube, whereby the maximum amount of liquid that can be maintained in said upper reservoir is controlled by the relative positions of said helical slit and said longitudinal slot and the relative positions of said inner sleeve drain and said outer sleeve drain.

US 6,330,961 B1
FOREARM MOUNTED STORAGE POUCH FOR SECURING ARTICLES AND UTILIZING A PERSONAL COMMUNICATOR
Anita Arriola Borja, 32133 Bayberry Rd., Wildomar, Calif. 92595
Filed Apr. 15, 2000, Appl. No. 549,421
Int. Cl. A45C *13/30*
U.S. Cl. 224—222 **16 Claims**

1. Method of facilitating safe use of a personnel communicator by a driver of a vehicle while driving comprising the steps of:

(a) mounting a pouch upon a forearm of said driver of a vehicle;

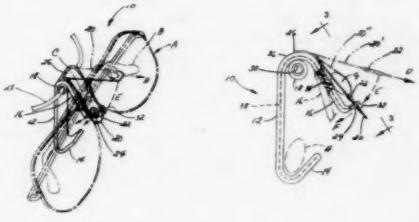
(b) providing a personal communicator for transmitting data to a distant communication center separated from said vehicle via



a wireless communication link and for relaying received data from the distant communication center to the driver of said vehicle via a wireless communication link; and

(c) inserting said personal communicator within said pouch at a position close to said driver's eyes and ears, enabling said driver to readily perceive said received data made available to said driver by said personnel communicator.

US 6,330,962 B1
EYEGLASS HOLDER
Luis Rodriguez, 8008 Cascadas Ave., North Port, Fla. 34287-1636
Filed Oct. 30, 2000, Appl. No. 699,668
Int. Cl. A44B *21/00*
U.S. Cl. 224—246 **5 Claims**



1. An eyeglass holder of the type used for securely supporting a pair of eyeglasses having temples and a bridge comprising:

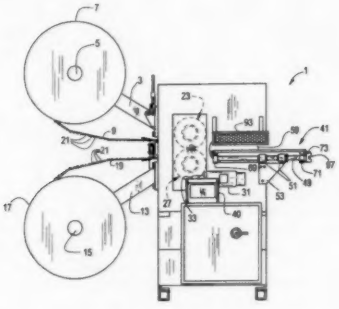
an elongated rigid or semi-rigid upright member having an upper end thereof from which an elongated rigid or semi-rigid support member dependently extends laterally downwardly from said upper end, said support member having sufficient length to supportively receive the bridge of the eyeglasses thereagainst with the temples in a closed position and oriented downwardly;

a lower end of said upright member upturned and extending from said upright member in the same direction as that of said support member and having a length sufficient to form a secondary support for the temples of the eyeglasses when the bridge of the eyeglasses is positioned against the support member;

an elongated substantially elastic bridge retaining member elastically extendable and connectable between a distal end of said support member and said upper end, said retaining member biasingly acting to hold the bridge of the eyeglasses against said support member with the stems supportively positioned in said secondary support;

a body support member for supportively attaching said eyeglass holder to a user whereby said upright member is held against the user with said support member extending downwardly away from the user when the bridge of the eyeglasses rests against said support member and retained thusly by said retaining member when the stems are in the closed position.

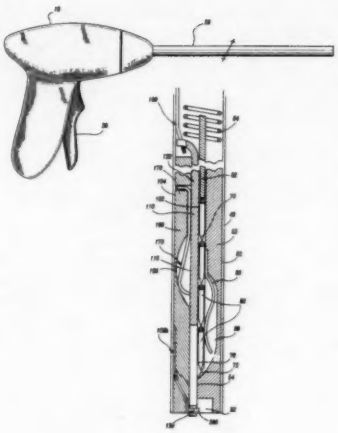
US 6,330,963 B1
APPARATUS FOR CONNECTING WOODEN COMPONENTS
Marc Olden, Pacific, and Kathy Liuhui Jin, Chesterfield, both of Mo., assignors to MiTek Holdings, Inc., Wilmington, Del.
Filed Oct. 18, 1999, Appl. No. 419,582
Int. Cl. B27F *7/02*
U.S. Cl. 227—152 **15 Claims**



5. Apparatus for connecting wood members in which wood members are fastened together by connector plates segmented from continuous strips of connector plates, and said plates having integral nails extending from one face thereof and connected end-to-end lengthwise of the strips, each strip being supplied in coil format, said apparatus comprising a frame having a front and a back, said frame having a throat in a generally horizontal plane, open at the front thereof and having a rear, an upper feeder associated with the frame operable to feed an upper strip from a coil thereof over the throat with the nails of the upper strip extending down to bring the leading plate of the upper strip to a position over the throat for being segmented from the upper strip and driven downward, a lower feeder associated with the frame operable to feed a lower strip from a coil thereof under the throat with the nails of the lower strip extending up to bring the leading plate of the lower strip to a position under the throat for being segmented from the lower strip and driven upward, an upper driver in the frame above the throat for driving down the plate segmented from the upper strip, a lower driver in the frame under the throat for driving up the plate segmented from the lower strip, a table carried by the frame for movement in the plane of the throat between a forward position extending forward out of the front of the frame in the plane of the throat for emplacement on the top of the table of said members in a pattern for being fastened together and a rearward position in the throat between said drivers for the driving of a connector plate segmented from the upper strip down into said members and the driving of a connector plate segmented from the lower strip up through an opening in the table into said members, and jigging members carried by the table for movement therewith, the jigging members being movable with respect to the table for engaging sides of said wood members to position said wood members in said pattern.

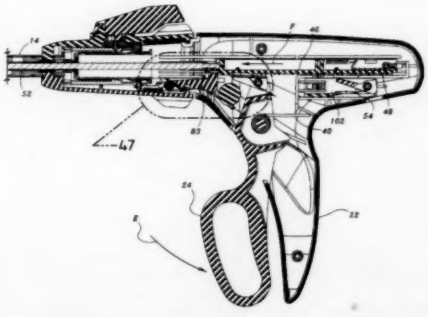
US 6,330,964 B1
APPARATUS AND METHOD FOR SURGICAL FASTENING
Helmut L. Kayan, Redwood, and James E. Jervis, Atherton, both of Calif., assignors to General Surgical Innovations, Inc., Norwalk, Conn.
Continuation-in-part of application No. 09/113,827, filed on Jul. 10, 1998, now Pat. No. 6,228,098. This application Apr. 2, 1999, Appl. No. 285,478.
Int. Cl. A61B *17/068*
U.S. Cl. 227—176.1 **5 Claims**

1. A fastening apparatus for use in endoscopic surgery comprising:



a handle portion;
a triggering mechanism operatively connected to the handle portion;
a plurality of vertically stacked fasteners;
at least one ramp for guiding toes of each of the plurality of vertically stacked fasteners into a driving channel; and
a fastener applicator connected to the handle portion, the fastener applicator comprising a shaping slide and at least two anvils.

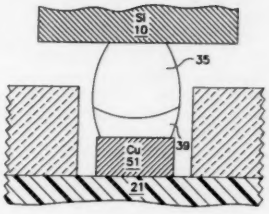
US 6,330,965 B1
SURGICAL STAPLING APPARATUS
Keith L. Milliman, Bethel; Frank J. Viola, Sandy Hook; Joseph Orban, III, Norwalk, and Randolph F. Lehn, Stratford, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Division of application No. 09/166,378, filed on Oct. 5, 1998, now Pat. No. 6,079,606, which is a division of application No. 08/935,980, filed on Sep. 23, 1997, now Pat. No. 5,865,361. This application Oct. 5, 2000, Appl. No. 680,093.
Int. Cl. A61B *17/068*
U.S. Cl. 227—176.1 **9 Claims**



1. A surgical stapling apparatus comprising:
a) a housing;
b) a movable handle supported by the housing, the movable handle being movable through an actuation stroke;
c) an elongated body extending distally from the housing and defining a longitudinal axis, the elongated body having a distal end adapted to releasably engage a disposable loading unit;

d) an advancement assembly including an actuation shaft and a driving pawl, the actuation shaft having a toothed rack and being supported at least in part within the housing, the driving pawl being operatively associated with the movable handle and biased into engagement with the rack, wherein during the actuation stroke, the driving pawl is movable to effect longitudinal advancement of the actuation shaft; and

e) a retraction mechanism including a release plate operatively associated with the actuation shaft, the release plate being movable relative to the actuation shaft into operative engagement with the driving pawl to disengage the driving pawl from the rack.



US 6,330,966 B1

AUTOMATIC WELDING MACHINE

Roman Eissfeller, Immendingen, Germany, assignor to Roman Eissfeller GmbH, Immendingen, Germany

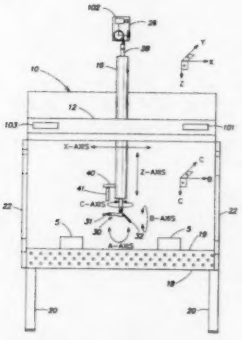
PCT No. PCT/DE98/02660, § 371 Date Nov. 6, 2000, § 102(e) Date Nov. 6, 2000, PCT Pub. No. WO99/12696, PCT Pub. Date Mar. 18, 1999

PCT Filed Sep. 9, 1998, Appl. No. 508,593

Claims priority, application Germany, Sep. 10, 1997, 197 39 720

Int. Cl. B23K *15/02*

U.S. Cl. 228—8 **12 Claims**



1. An automatic welding machine comprising a baseplate for placing workpieces that are to be welded, and with a welding head that can move in an A-B-C direction and that is part of a welding apparatus, the welding head being coupled to an X-Y-Z motion mechanism for the automatic motion of the welding head along the workpieces according to the norm of a control routine that has been prescribed by a preceding teach-in-process and that has been stored in a control device,

characterized in that the X-Y-Z motion mechanism includes at least three linear motion devices, each driven by a motor with a self-locking gear mechanism, and in that a handle with integrated sensors for an operator is present on the X-Y-Z motion mechanism, and in that these sensors are coupled to the control device, and in that the motors of the X-Y-Z motion mechanism can be moved exclusively according to the measure of the output signals from the sensors.

US 6,330,967 B1

PROCESS TO PRODUCE A HIGH TEMPERATURE INTERCONNECTION

Joseph M. Milewski, Kirkwood, and Charles G. Woychik, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 13, 1997, Appl. No. 815,656

Int. Cl. B23K *31/02*; **H01L** *29/40*;*21/44*

U.S. Cl. 228—180.22 **4 Claims**

1. A process of joining an integrated circuit (IC) chip to a microelectronic circuit card comprising the steps of:

depositing a ball comprising lead (Pb) on solder wettable input/output (I/O) terminals of said IC chip such that said ball has an exposed surface;

depositing a layer of gold (Au) having a thickness on the exposed surface of said ball;

providing a matching footprint of said solder wettable I/O terminals on said microelectronic circuit card;

aligning said layered ball on said IC chip with the corresponding footprint on said microelectronic circuit card;

heating said layer of Au at a temperature greater than a Pb/Au eutectic temperature to form a Pb/Au eutectic alloy on said ball to bond said IC chip to said microelectronic circuit card; and

annealing said Pb/Au alloy at a predetermined temperature lower than the temperature of said reflowing step for a predetermined time to diffuse and intermix throughout the bond said Au from said Pb/Au alloy and said Pb from said ball, to increase melting temperature of the bond between said IC chip and said microelectronic circuit card.

US 6,330,968 B1

FILE FOLDER WITH CONNECTING SIDE PIECES

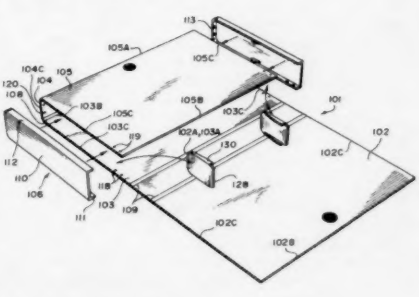
Guido Peleman, Puurs, Belgium, assignor to Unibind (Cyprus) Limited, Cyprus

Continuation-in-part of application No. 08/943,300, filed on Oct. 14, 1997, now Pat. No. 5,931,373. This application Aug. 2, 1999, Appl. No. 366,045.

Claims priority, application Belgium, Oct. 15, 1996, 09600870

Int. Cl. B65D *37/00*

U.S. Cl. 229—122.24 **7 Claims**



1. A file folder, comprising:

a first sheet forming a first sidewall made of a rigid material having a first edge, a second edge and two side edges;

a second sheet made of a rigid material having a first edge, a second edge and two side edges;

a flap forming a second sidewall made of a rigid material having a first edge, a second edge and two side edges;

a back section having a first edge, a second edge and two side edges, the back section flexibly connected to said first sheet at respective ones of said first edges and said flap at respective ones of said second edges;

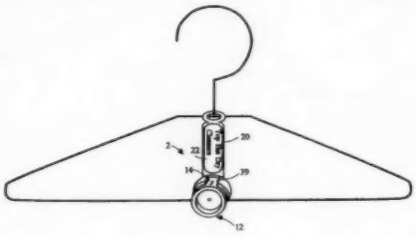
said first and second sheets flexibly connected at their respective ones of said first edges, said second sheet inwardly directable towards the flap;

a pair of connecting side pieces which connect said flap to said first sheet at said side edges such that said flap is kept spaced at a distance from said first sheet, said connecting side pieces being attached to said flap and said first sheet by mechanical connections positioned on the second sidewall of said flap and on the first sidewall of said first sheet; and

locking elements inserted between the flap and said first sheet at said side edges, said locking elements cooperating with the mechanical connections to prevent them from becoming loose, and

the locking elements comprise discrete elements separate from said at least one of said sheets, flap and connecting side pieces.

US 6,330,969 B1
CLEANER CALCULATOR
Sandro Villaraut, 401 Center St., Garwood, N.J. 07027
Provisional application No. 60/143,376, filed on Jul. 12, 1999. This application Jul. 12, 2000, Appl. No. 614,292.
Int. Cl. G06C *3/00*
U.S. Cl. 235—64.7 **17 Claims**



1. A cleaner calculator for maintaining a dry-cleaning count, comprising:

an integral tag stem having an attachment section for hanging the cleaner calculator, a promotional label area, and a base section,

a turn-dial indicator rotatably mounted on the base section of the tag stem;

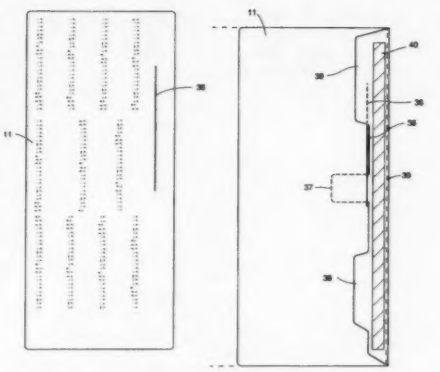
an indexing mechanism for indexed engagement of the turn-dial indicator with the base section of the tag stem;

whereby said cleaner calculator can be used to count the number of times a piece of clothing has been worn between dry cleanings to determine when it is ready to be returned to the dry cleaner.

US 6,330,970 B1
GLOBAL TIME CALCULATOR
Edward E. Whalen, 101 Lombard St., Suite 612 West, San Francisco, Calif. 94111
PCT No. PCT/US98/15769, § 371 Date Dec. 7, 1999, § 102(e) Date Dec. 7, 1999, PCT Pub. No. WO99/22357, PCT Pub. Date May 6, 1999
Continuation-in-part of application No. 08/958,949, filed on Oct. 28, 1997, now Pat. No. 6,006,986. This PCT application Jul. 30, 1998, Appl. No. 445,513.
Int. Cl. G06G *1/02*
U.S. Cl. 235—70 R **8 Claims**

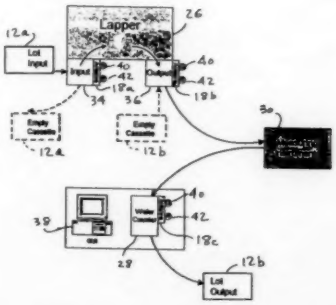
1. A global time calculator, comprising:

an insert including a first side, a second side, and an aperture, said first side and second side having a plurality of longitudinally disposed rows of incremental time designations displayed thereon, said rows defining a plurality of transversely disposed sets of predetermined time designations; and



a sleeve, wherein said insert is slidably connected with said sleeve so as to be shiftable in a vertical direction, said sleeve comprising a first side, a second side, said first side having an extension insertable into said aperture and operative to limit movement of said insert within boundaries set by said aperture.

US 6,330,971 B1
RADIO FREQUENCY IDENTIFICATION SYSTEM AND METHOD FOR TRACKING SILICON WAFERS
Frank Robert Mabry, Spartanburg, S.C., and James Scott Rhodes, Redmond, Wash., assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.
Continuation of application No. 09/129,247, filed on Aug. 5, 1998, now abandoned, Provisional application No. 60/091,961, filed on Jul. 7, 1998. This application Oct. 3, 2000, Appl. No. 677,909.
Int. Cl. G06K *15/00*
U.S. Cl. 235—383 **20 Claims**



1. A system for tracking semiconductor wafers through processing operations performed in a predetermined sequence at a plurality of stations, said wafers being loaded in one or more wafer carriers for transport between the stations, said system comprising:

a passive tag mounted on the carrier, said tag including a memory which has a plurality of pages storing information identifying the carrier and information relating to the wafers in the carrier and the sequence of processing operations to be performed at the stations, said stored information including information identifying the carrier and the processing operations, said information identifying the carrier being stored in a selected one of said tag pages and including data representative of a carrier identification address, said carrier identification address being stored in the selected one of the tag pages storing the information identifying the carrier and being per-

manently write-locked, said remaining tag pages including at least one reserved page to which information from another one of the pages is transferred in the event that the other page fails;

a reader for reading the stored information from the tag pages;

a plurality of antennas connected to the reader, each antenna being located proximate to one or more of the stations and having a transmission range which defines a reader position, said reader and tag communicating by radio frequency signals via one of the antennas when the carrier is at the respective reader position; and

a host computer for processing the stored information read by the reader to track the wafers, said host computer and reader communicating in accordance with an interface protocol by which the host computer commands the reader to read the stored information from one or more selected tag pages and the reader provides the stored information read from the selected tag pages to the host computer.

US 6,330,972 B1

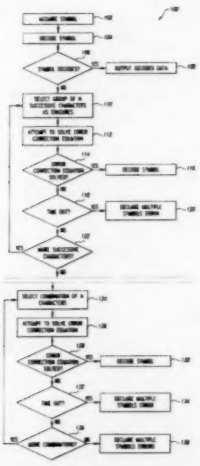
ERROR CORRECTION ENHANCEMENT FOR CODE 93I AND OTHER MACHINE-READABLE SYMBOLOGIES

Christopher A. Wiklof, Everett, and H. Sprague Ackley, Seattle, both of Wash., assignors to Intermec IP Corporation, Beverly Hills, Calif.

Filed Oct. 22, 1998, Appl. No. 177,679

Int. Cl. G06K *7/10;9/22;19/06*

U.S. Cl. 235—462.25 **28 Claims**



1. A method of decoding a machine readable barcode symbol comprising a number of characters including a number of error correction characters, each of the characters associated with a respective character code, the method comprising:

reading the machine readable barcode symbol;

selecting a group of successive characters from the machine readable barcode symbol, the number of characters in the selected group being equal to the number of error correction characters in the machine readable barcode symbol;

attempting to solve an error correction equation using the character codes of the characters in the machine readable barcode symbol while identifying each of the characters in the selected group as erasures; and

repeating for successive groups of successive characters the selecting a group of successive characters and the attempting to solve an error correction equation using the character codes of the characters in the machine readable barcode symbol while identifying each of the characters in the selected group as erasures until either the error correction equation solves or each group of successive characters has been identified.

US 6,330,973 B1

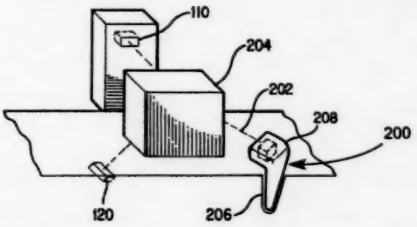
INTEGRATED CODE READING SYSTEMS INCLUDING TUNNEL SCANNERS

Raj Bridgelall, Ronkonkoma; Howard Shepard, Great River; Edward Barkan, Miller Place; Robert Sanders, St. James; Mitch Maiman, Holbrook; Paul Dvorkis, E. Setauket; Joseph Boriotti, East Northport; Mark Krichever, Hauppague; Vladimir Gurevich, Ronkonkoma, and Alexander Breytman, Bellmore, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Continuation-in-part of application No. 09/182,205, filed on Oct. 30, 1998, and a continuation-in-part of application No. 08/877,652, filed on Jun. 17, 1997, and a continuation-in-part of application No. 08/652,830, filed on May 23, 1996, now abandoned, which is a division of application No. 08/377,732, filed on Jan. 25, 1995, now Pat. No. 5,691,528, and a continuation-in-part of application No. 08/153,053, filed on Nov. 17, 1993, now Pat. No. 5,504,316, which is a division of application No. 08/127,898, filed on Sep. 14, 1993, now Pat. No. 5,495,097, and a continuation-in-part of application No. 08/108,521, filed on Jul. 19, 1993, now abandoned, and a continuation-in-part of application No. 08/037,143, filed on Mar. 25, 1993, now abandoned, and a continuation-in-part of application No. 08/028,107, filed on Mar. 8, 1993, now Pat. No. 5,408,081, and a continuation-in-part of application No. 07/981,448, filed on Nov. 25, 1992, now Pat. No. 5,478,997, which is a division of application No. 07/868,401, filed on Apr. 14, 1992, now Pat. No. 5,280,165, which is a division of application No. 07/715,267, filed on Jun. 14, 1991, now Pat. No. 5,235,167, which is a division of application No. 07/520,464, filed on May 8, 1990, now Pat. No. 5,168,149, which is a continuation-in-part of application No. 07/428,770, filed on Oct. 30, 1989, now Pat. No. 5,099,110. This application May 6, 1999, Appl. No. 305,463.

Int. Cl. G06K *7/10;9/22*

U.S. Cl. 235—462.45 **5 Claims**



1. An optical scanning station for use by an operator in reading optical code symbols on target objects comprising a horizontal surface for supporting target objects;

a housing including a portion on a side of the horizontal surface nearest to the operator and extending above the plane of the horizontal surface, the portion of the housing containing at least a first optical code reading module for reading optical codes on sides of the target objects including a side generally facing the operator;

a horizontal window in said horizontal surface;

at least a second optical code reading module located underneath the horizontal window for reading optical code on at least the underside of target objects located on the horizontal window; and

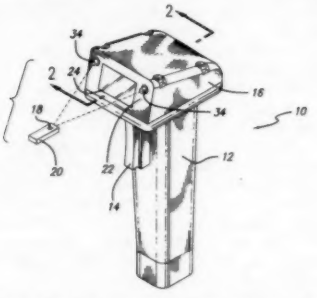
wherein the raised portion of the housing is a side rail which rises no more than about two inches above the plane of the horizontal surface and wherein the first optical code reading module is positioned a distance away from the edge of the horizontal window nearest the side rail, said distance being

selected to permit the field of view of the first module to project upwardly to a sufficient degree to include symbols on the sides of target objects facing the operator and located above the edge of the horizontal window nearest the operator.

US 6,330,974 B1
HIGH RESOLUTION LASER IMAGER FOR LOW CONTRAST SYMBOLOGY

H. Sprague Ackley, Seattle, Wash., assignor to Intermec IP Corp., Woodland Hills, Calif.

Filed Mar. 29, 1996, Appl. No. 624,173
Int. Cl. G06K *7/10*
U.S. Cl. 235—472.01 **16 Claims**



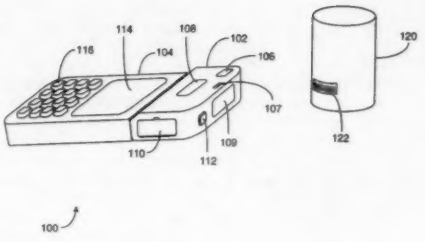
1. A device for imaging low contrast symbols comprising:
a housing having a window;
an electro-optical element disposed within said housing behind said window;
at least two laser diodes mounted externally to said housing adjacent to said window, said laser diodes respectively providing beams that intersect at a point within a field of view of said electro-optical element, said beams providing light to said electro-optical element through said window that has reflected off a symbol positioned at said intersection point; and
control means for exciting said at least two laser diodes at a first intensity level to properly focus the electro-optical element on the symbol and at a second intensity level to illuminate the symbol sufficiently for scanning by the electro-optical element.

US 6,330,975 B1
COMBINED CODE READER AND DIGITAL CAMERA USING A COMMON PHOTODETECTOR

Alan G. Bunte, Cedar Rapids; Arvin D. Danielson, Solon; Dennis A. Durbin, Cedar Rapids, all of Iowa, and James D. Bennett, Austin, Tex., assignors to Intermec IP Corp., Woodland Hills, Calif.

Continuation of application No. 08/703,564, filed on Aug. 27, 1996, now Pat. No. 5,821,523, which is a continuation-in-part of application No. 08/461,605, filed on Jun. 5, 1995, now Pat. No. 5,902,988, which is a continuation of application No. 08/277,132, filed on Jul. 19, 1994, now abandoned, which is a continuation of application No. 07/919,488, filed on Jul. 27, 1992, now abandoned, which is a continuation-in-part of application No. 07/889,705, filed on May 26, 1992, now abandoned, and a continuation-in-part of application No. 07/849,771, filed on Mar. 12, 1992, now abandoned, said application No. 07/889,705 is a continuation-in-part of application No. 07/849,771. This application Oct. 13, 1998, Appl. No. 170,689.
Int. Cl. G06K *7/10*
U.S. Cl. 235—472.01 **20 Claims**

1. An image capture system having a capture mode and a decode mode, the image capture system comprising:

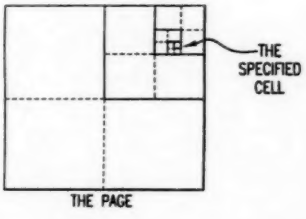


an image capture module;
a buffer communicatively coupled to the image capture module for storing an image captured by the image capture module;
a first circuitry communicatively coupled to the buffer, the first circuitry storing the image during the capture mode; and
a second circuitry communicatively coupled to the buffer, the second circuitry decoding the image during the decode mode.

US 6,330,976 B1
MARKING MEDIUM AREA WITH ENCODED IDENTIFIER FOR PRODUCING ACTION THROUGH NETWORK

Marc Dymetman, Grenoble, France, and Max Copperman, Santa Cruz, Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of application No. PCT/US98/20597, filed on Sep. 30, 1998. This application Mar. 25, 1999, Appl. No. 276,085.
Claims priority, application United Kingdom, Apr. 1, 1998, 9806973; Apr. 1, 1998, 9806977; Apr. 1, 1998, 9807001
Int. Cl. G06K *19/00*
U.S. Cl. 235—487 **31 Claims**



1. An article of manufacture for obtaining automatic actions through a network using processing circuitry for connecting to the network and detection circuitry for providing input signals to the processing circuitry, the automatic actions being provided by action devices connected to the network; the article comprising:
an area of a marking medium; and
machine-readable markings within the area of the marking medium that encode an action/medium identifier; the machine-readable markings being decodable to obtain the action/medium identifier by the processing circuitry using input signals from the detection circuitry, the input signals including information defining the machine-readable markings; the action/medium identifier specifying (a) an action device using a globally unique identifier that identifies the, marking medium and (b) an action using a location identifier that identifies a zone of the area of the marking medium; the processing circuitry being adapted to provide the location identifier through the network to the action device to produce the action; the action relating to the zone of the area of the marking medium; the action device providing the action automatically in response to the location identifier.

US 6,330,977 B1

ELECTRONIC LABELING SYSTEMS AND METHODS AND ELECTRONIC CARD SYSTEMS AND METHODS

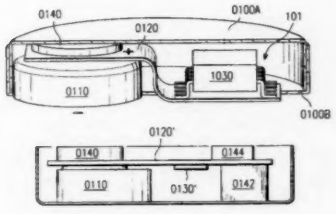
Steven N. Hass, Carrollton; Michael L. Bolan, Dallas; Nicholas M. G. Fekete, Richardson, and Robert D. Lee, Denton, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Division of application No. 09/009,666, filed on Jan. 20, 1998, now Pat. No. 6,036,101, which is a continuation of application No. 08/336,341, filed on Nov. 8, 1994, now abandoned, which is a continuation-in-part of application No. 08/031,776, filed on Mar. 5, 1993, now Pat. No. 6,016,255, which is a continuation-in-part of application No. 08/022,258, filed on Feb. 24, 1993, now abandoned, and a continuation-in-part of application No. PCT/US91/03376, filed on May 15, 1991, application No. 09/291,262, which is a continuation-in-part of application No. 07/615,606, filed on Nov. 19, 1990, now Pat. No. 5,206,905, which is a continuation-in-part of application No. PCT/US90/02891, filed on May 15, 1990, said application No. 07/615,606 is a continuation-in-part of application No. 07/352,581, filed on May 15, 1989, now Pat. No. 5,210,846.

This application Apr. 13, 1999, Appl. No. 291,262.

Int. Cl. G06K *19/00*

U.S. Cl. 235—487 **12 Claims**



1. A communication module system, comprising:

(a) a substantially coin-shaped module with an electrically conductive first flat face insulated from an electrically conductive second flat face plus abutting cylindrical surface with said second flat face extending beyond said cylindrical surface to form a flange on said module;

(b) a printed circuit board disposed intermediate to said first flat face and said second flat face;

(c) circuitry included with said printed circuit board, said circuitry with connections to said first and second flat faces, wherein said circuitry provides receipt of and transmission of digital signals as voltage differences between said first and second flat faces;

(d) a power source disposed intermediate to said printed circuit board and said first flat face, said power source providing power to said circuitry; and

(e) a first electrical contact electrically coupled to the first flat face and a second electrical contact electrically coupled to the second flat face, wherein said first and second electrical contacts are formable to match a variety of physical surfaces.

US 6,330,978 B1

ELECTRONIC PURSE CARD VALUE SYSTEM CARD SECURITY METHOD

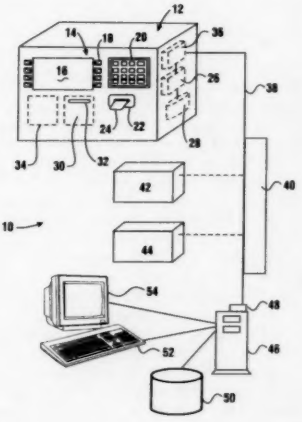
Rafael Molano, Hudson; Lawrence Gianfagna, North Canton; Douglas E. Roth, Bolivar, all of Ohio; Ed Kurtek, Encinitas, Calif.; Alan Goulet, Riverton, Utah; Robert D. Symonds, Novelty, Ohio; Robert Bradley Gill, Hamilton, Canada; William Biwer, Hartland, Wis.; Mike Walsh, Hartford, Wis.; Julie Welsh, Nashotah, Wis.; Richard Gebhard, Oconomowoc, Wis., and Joel Spice-Kopischke, Milwaukee, Wis., assignors to Diebold Incorporated, North Canton, Ohio

Provisional application No. 60/044,423, filed on Apr. 29, 1997.

This application Apr. 27, 1998, Appl. No. 67,775.

Int. Cl. G06K *19/06*

U.S. Cl. 235—492 **15 Claims**



1. A method comprising the steps of:

storing a first value in a first area of a card memory of a smart card, the first value representative of a first type of data;

storing a second value in a second area of the card memory, the second value representative of a second type of data;

calculating a third value, the third value being a function of both the first value and the second value; and

storing the third value in the card memory of the smart card as an integrity check.

US 6,330,979 B2

VEHICLE AIR CONDITIONER WITH AUTOMATICAL SELECTION OF FOOT MODE AND FOOT/DEFROSTER MODE

Kouji Yamashita, Obu; Satohisa Yoshida, Anjo; Makoto Umebayashi, Chiryu; Seiji Kamei, Nagoya; Hiroyuki Hotta, Toyota, and Hidekazu Uramune, Nishikamo-gun, all of Japan, assignors to Denso Corporation, Kariya, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Dec. 4, 2000, Appl. No. 729,555

Claims priority, application Japan, Dec. 16, 1999, 11-357994; Jun. 8, 2000, 12-172107

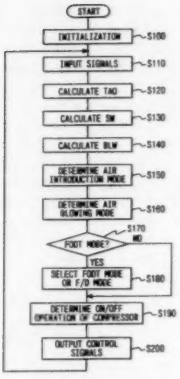
Int. Cl. B60H *1/02*

U.S. Cl. 237—12.3 R **20 Claims**

1. An air conditioner for a vehicle having a passenger compartment, the air conditioner comprising:

an air conditioning case for defining an air passage, the air conditioning case having a foot outlet through which air is blown toward a lower side of the passenger compartment, and a defroster outlet through which air is blown toward a windshield;

a blower for blowing air into the passenger compartment through the air passage;



a heating heat exchanger, disposed in the air passage, for heating air to be introduced into the passenger compartment; and

a control unit which controls an air state blown into the passenger compartment to set a foot mode where air is mainly blown from the foot outlet while a small amount of air is blown from the defroster outlet, and to set a foot/defroster mode where an amount of air blown from the foot outlet is reduced and an amount of air blown from the defroster outlet is increased as compared with the foot mode, wherein:

the control unit sets the foot mode when a target temperature of air blown into the passenger compartment is higher than or equal to a predetermine target value; and

the control unit selects the foot/defroster mode in place of the foot mode, when at least one of a first condition where a vehicle speed is higher than or equal to a predetermined speed and a second condition where a sunlight amount entering into the passenger compartment is lower than or equal to a predetermined amount is satisfied.

US 6,330,980 B1

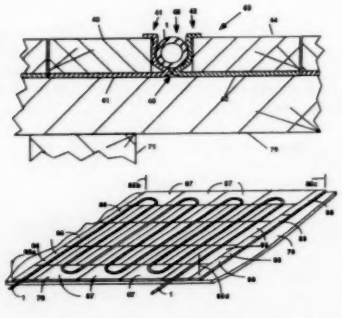
DRY INSTALLATION OF A RADIANT FLOOR OR WALL HYDRONIC HEATING SYSTEM, METAL RADIATING PLATES THAT ATTACH TO THE EDGES OF SIDE-BY-SIDE BOARDS AND PROVIDE METAL SLOTS FOR HOLDING HOT WATER TUBING

Joachim Fiedrich, 20 Red Pine Rd., Carlisle, Mass. 01741

Provisional application No. 60/064,022, filed on Nov. 3, 1997. This application Nov. 3, 1998, Appl. No. 185,165.

Int. Cl. F24D *5/10*

U.S. Cl. 237—69 **20 Claims**



1. In a hydronic heating system including a heating element that is a length of tubing that conducts water mounted in a wall, floor or ceiling of an area heated by said system against a radiating metal plate, two spaced apart boards for holding said metal plate and providing an elongated space for holding said length of tubing adjacent said plate, said tubing being inserted into said space against said plate, the improvement comprising:

(a) said metal plate is provided in two separate pieces, each of which is attached to an edge of one of said spaced apart boards,

(b) said two separate pieces provide a metal groove that projects into said elongated space and

(c) said metal groove accommodates the insertion therein of said tubing from one side thereof so that the tubing is held therein in intimate thermal contact with said plate metal,

(d) whereby said plate is heated by conduction of heat from said tubing and radiates heat to said area.

US 6,330,981 B1

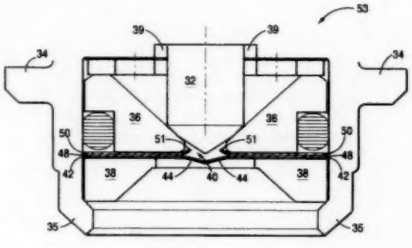
FUEL INJECTOR WITH TURBULENCE GENERATOR FOR FUEL ORIFICE

John F. Nally, Jr., Williamsburg; William A. Peterson, Jr., Smithfield; Farid H. Miandoab, Virginia Beach, and Hamid Sayar, Newport News, all of Va., assignors to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Mar. 1, 1999, Appl. No. 259,716

Int. Cl. F02M *61/00*

U.S. Cl. 239—533.12 **9 Claims**



1. A fuel injection valve for an internal combustion engine, comprising:

an armature assembly including an injector needle reciprocable between a closed position and an open position:

a needle seat for receiving the injector needle in the closed position, the needle seat including a central opening therethrough;

a discharge orifice disk disposed downstream of the needle seat, the discharge orifice disk having at least one opening directing fuel toward a desired location; and

a turbulence generator disposed upstream of the discharge orifice disk, the turbulence generator including:

a first turbulence generator disk having a central opening smaller than the central opening in the needle seat, the first turbulence generator disk disposed downstream of the needle seat, a perimeter of the central opening in the first turbulence generator disk is angled upstream from a remainder of the first turbulence generator disk, and

a second turbulence generator disk having a central opening at least as large as a diameter of a circle containing the at least one opening in the discharge orifice disk, the second turbulence generator disk being disposed downstream of the first turbulence generator disk.

US 6,330,982 B1

HAMMER MILL

Xin Guo Yu, and Qi Cheng Le, both of 1408 Room No. 9, YanJi Six Village, Shanghai, China, 200093

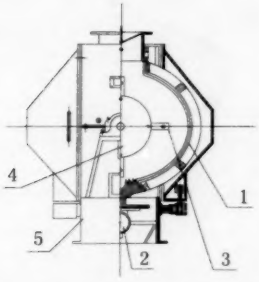
PCT No. PCT/CN97/00130, § 371 Date May 12, 1999, § 102(e) Date May 12, 1999, PCT Pub. No. WO98/20977, PCT Pub. Date May 22, 1998

PCT Filed Nov. 14, 1997, Appl. No. 308,021

Claims priority, application China, Nov. 14, 1996, 96116579

Int. Cl. B02C *13/286*

U.S. Cl. 241—73 **7 Claims**



1. A blade hammer mill adapted to produce both fine materials and course materials, the mill comprising:

a screen assembly comprising screen plates, side plates and a screen frame, the screen assembly being of symmetrical axis design, with a lateral width that is extended with an active vibrator;

hammer blades;

a rotor;

machine body;

a motor; and

a vibration isolating device that isolates the active vibrator from the machine body.

US 6,330,983 B1

RECORDING AND/OR REPRODUCING DEVICE HAVING A TAPE PULL-OUT ELEMENT AND A COUPLING ELEMENT AND HAVING GUIDE MEANS FOR THESE TWO PARTS

Andreas Augustin, Brunn am Gebirge, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

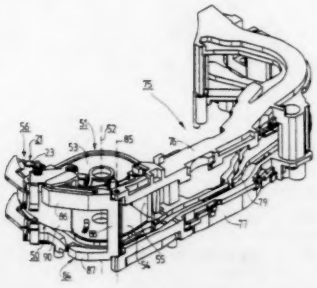
PCT No. PCT/EP99/08954, § 371 Date Jul. 12, 2000, § 102(e) Date Jul. 12, 2000, PCT Pub. No. WO00/30094, PCT Pub. Date May 25, 2000

PCT Filed Nov. 11, 1999, Appl. No. 600,193

Claims priority, application European Pat. Off., Nov. 12, 1998, 98890334

Int. Cl. G03B *1/58*

U.S. Cl. 242—332.4 **7 Claims**



1. A recording and/or reproducing device (**1**), into which a cassette (**3**) can be loaded, which cassette comprises a housing (**4**) and a rotationally drivable supply reel (**19**) accommodated in the housing (**4**) and a record carrier (**20**) in the form of a tape wound onto the reel hub of the supply reel (**19**) and a coupling element (**21**) connected to the record carrier (**20**) in the area of the free end of the record carrier (**20**) and held in a coupling position, and can be brought into an operating position in the recording and/or reproducing device (**1**), and

which comprises a chassis (**2**) for carrying component parts, and which comprises a rotationally drivable take-up reel (**45**) having a reel hub (**47**) and

which comprises a pull-out element (**50**) constructed to be coupled to the coupling element (**21**) and which, together with the coupling element (**21**) coupled to it, forms a pull-out assembly (**56**), and

which comprises actuating means (**70**) which are connected to the pull-out element (**50**) and by which the pull-out assembly (**56**) can be moved away from the cassette (**3**), which is in its operating position, and up to the reel hub (**47**) of the take-up reel (**45**), in order to bring into engagement with one another, on the one hand, the reel hub (**47**) and, on the other hand, the pull-out assembly (**56**) comprising the pull-out element (**50**) and the coupling element (**21**) coupled thereto, and

which in an area of a tape transport path comprises at least one tape guide element (**71**, **74**) for guiding the record carrier (**20**) and recording and/or reproducing means (**72**) for scanning the record carrier (**20**), and

which has first guide means (**75**) connected to the chassis (**2**) and second guide means (**23**, **24**) cooperating with the first guide means (**75**), by which guide means (**75**, **23**, **24**) the pull-out element (**50**) and the coupling element (**21**) coupled thereto, when these two elements (**50**, **21**) are jointly moved, can be guided past the at least one tape guide element (**71**, **74**) and past the recording and/or reproducing means (**72**) without contact with the same,

wherein the second guide means (**23**, **24**) have been provided on the coupling element (**21**) and during a joint movement of the pull-out element (**50**) and of the coupling element (**21**) coupled thereto the coupling element can be guided directly and the pull-out element (**50**) can be guided indirectly with the aid of the first guide means (**75**) and the second guide means (**23**, **24**), and

wherein the first guide means (**75**) include two guide members (**76**, **77**) which extend adjacent the tape transport path, which are spaced apart, in the width direction of the record carrier (**20**), by a distance larger than the width of record carrier (**20**), and in each of which a guide channel (**78**, **79**) has been provided, and

the second guide means (**23**, **24**) comprise at least two guide elements (**23**, **24**) which project from the coupling element (**21**) in the width direction of the record carrier (**20**) beyond the record carrier (**20**) and of which one guide element (**23**) engages in a guide channel (**78**) and of which another guide element (**24**) engages in the other guide channel (**79**).

US 6,330,984 B1

METHOD AND APPARATUS FOR STORING STRIP MATERIAL

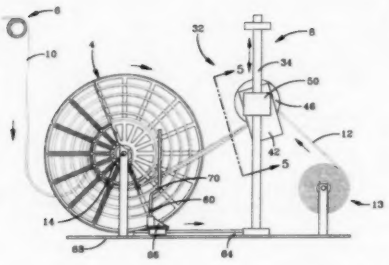
Brandy Cyan Barker, Akron; Donald Chester Kubinski, Medina, both of Ohio; Rodney Taylor Moffatt, Ontario, Canada, and Christopher David Dyrlund, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 30, 1999, Appl. No. 475,339

Int. Cl. B65H *18/08*

U.S. Cl. 242—536 **4 Claims**

1. An improved method for delivering a continuous strip material (**12**) to a spool (**4**) upon which it is wound, wherein the method includes the step of reducing the effective width of the continuous strip material (**12**) prior to its being wound on the spool (**4**) by shaping the strip material (**12**) into an arcuate cross-section with means (**32**, **32'**) rotatable about an axis (**35**) parallel with the axis of the spool (**4**), the improvement comprising:

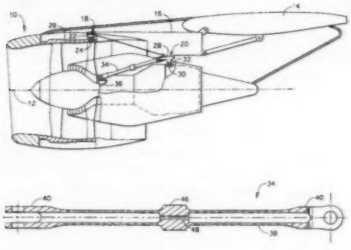


moving the shaping means axis of rotation (**35**) in a vertical direction as needed while winding the strip material (**12**) on the spool (**4**) and maintaining the shaping means axis of rotation (**35**) parallel with the spool (**4**).

US 6,330,985 B1
LINK COMPONENT FOR AIRCRAFT ENGINE MOUNTING SYSTEMS

John Alan Manteiga, North Andover, Mass.; Cornelius Harm Dykhuizen; Thomas Peter Joseph, both of West Chester, Ohio; Christopher James Wilusz, Peabody, Mass.; Robert Eugene Troup, Hamilton; Ethan Boger, Cincinnati, both of Ohio, and Anthony John Franceschelli, Beverly, Mass., assignors to General Electric Company, Cincinnati, Ohio

Filed Jun. 30, 2000, Appl. No. 608,480
Int. Cl. B64D *27/00*
U.S. Cl. 244—54 **17 Claims**



1. In a mounting system for mounting an engine to an aircraft, a link comprising:

a span section;

a first connector formed at one end of said span section;

a second connector formed at another end of said span section; and

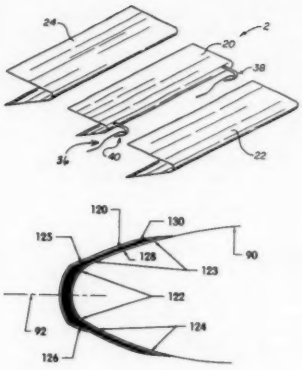
means for placing resonant frequencies of said link away from excitation frequencies of said engine.

US 6,330,986 B1
AIRCRAFT DE-ICING SYSTEM

Robert B. Rutherford, Kirtland, and Richard L. Dudman, Euclid, both of Ohio, assignors to Northcoast Technologies, Chardon, Ohio

Division of application No. 09/364,804, filed on Jul. 30, 1999, now Pat. No. 6,364,804, which is a continuation-in-part of application No. 08/935,165, filed on Sep. 22, 1997, now Pat. No. 5,934,617. This application Oct. 16, 2000, Appl. No. 690,031.
Int. Cl. B64D *15/00*
U.S. Cl. 244—134 E **39 Claims**

1. A heat-conducting tape having a length and comprising at least two layers laminated to each other under heat and pressure,

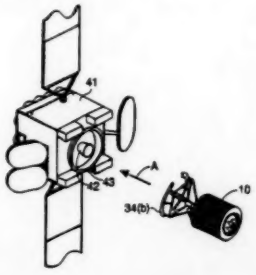


the layers comprising (i) an outer heat-conducting layer that is an electrical insulator, and (ii) a non-metallic electrical and heat-conducting layer, the non-metallic electrical and heat-conducting layer consisting of a continuous flexible expanded graphite foil sheet and having a first area along the length of the tape comprising a first thickness, and a second area disposed on a side of the first area along the length of the tape comprising a second thickness, wherein the thickness of the flexible expanded graphite foil sheet in the first area is greater than the thickness of the foil sheet in the second area.

US 6,330,987 B1
APPARATUS AND METHODS FOR IN-SPACE SATELLITE OPERATIONS

David R. Scott, 6033 W. Century Blvd., Suite 400, Los Angeles, Calif. 90045

Continuation of application No. 09/146,161, filed on Aug. 2, 1998, now Pat. No. 6,017,000, which is a division of application No. 08/700,712, filed as application No. PCT/US95/15103, filed on Nov. 13, 1995, now Pat. No. 5,806,802, said application No. 09/146,161 is a continuation-in-part of application No. PCT/US94/13052, filed on Nov. 14, 1994, and a continuation-in-part of application No. 08/152,459, filed on Nov. 12, 1993, now Pat. No. 5,511,748. This application Jan. 21, 2000, Appl. No. 489,140.
This patent is subject to a terminal disclaimer.
Int. Cl. B64G *1/00*
U.S. Cl. 244—158 R **5 Claims**



1. A method of performing in-space proximity operations, said method comprising:

(a) moving an extension spacecraft to within proximity of an orbiting target satellite;

(b) mechanically connecting said extension spacecraft to said target satellite to form a docked satellite-spacecraft combination, said extension spacecraft including,

(i) guidance, navigation and control systems for position control of said extension spacecraft and said docked satellite-spacecraft combination, and

(ii) an onboard propellant supply for extending the life of said target satellite; and

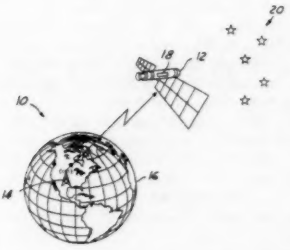
(c) continuously activating said guidance, navigation and control systems of said extension spacecraft to extend the life of said target satellite.

US 6,330,988 B1

SYSTEM FOR STAR CATALOG EQUALIZATION TO ENHANCE ATTITUDE DETERMINATION

Yong Liu, San Marino; Yeong-Wei Andy Wu, Rancho Palos Verdes, and Rongsheng Li, Hacienda Heights, all of Calif., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Filed Jul. 29, 2000, Appl. No. 628,779
Int. Cl. B64G *1/24*
U.S. Cl. 244—164 **21 Claims**



1. An apparatus for star catalog equalization to enhance attitude determination comprising:

a star tracker for sensing a plurality of positions of a plurality of stars relative to said star tracker, said star tracker having a field of view and generating a plurality of signals corresponding to said plurality of positions in said field of view;

a star catalog comprising a primary array having a plurality of steps with a resolution of a declination step size, each step corresponding to a secondary array containing a plurality of declination angles and right ascension angles corresponding to a plurality of positions said plurality of stars; and

a controller coupled to said star catalog and said star tracker, said controller having control logic operative to calculate a plurality of desired star locations, associate one of said plurality of stars with each of said plurality of desired star locations to generate an associated plurality of stars, and create an equalized star catalog based on said associated plurality of stars.

US 6,330,989 B1

CONDUIT GUIDE FOR BICYCLES

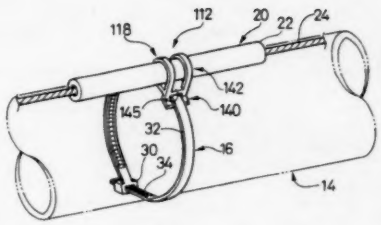
Yoshifumi Okamoto, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Apr. 15, 1999, Appl. No. 291,969
Int. Cl. F16L *3/08*
U.S. Cl. 248—74.1 **19 Claims**

1. A retainer for coupling a conduit to a frame member via a strap, comprising:

a foot portion having a first side with a pair of separate foot sections spaced from each other to form a space therebetween, each of said foot sections having a frame contacting surface on said first side of said foot portion;

a conduit retaining portion extending from a second side of said foot portion that is opposite from said first side of said foot portion, said conduit retaining portion being formed by two



U-shaped members axially spaced from each other with each of said U-shaped members having a pair of leg sections extending from a bight section, said conduit retaining portion being shaped to form a conduit receiving opening on said second side of said foot portion between said foot sections; and

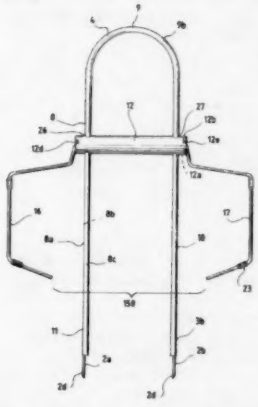
a strap receiving opening formed between said foot portion and said conduit receiving opening of said conduit retaining portion.

US 6,330,990 B1

UNIVERSAL MECHANICAL BAG HOLDER

Raymond Haubrich, 1089 Forest Ave., Des Plaines, Ill. 60076

Filed Nov. 1, 1999, Appl. No. 431,377
Int. Cl. B65B *67/04;* **B62B** *1/00*
U.S. Cl. 248—99 **7 Claims**



1. A mechanical bag holder for holding and supporting bags and other containers, said mechanical bag holder suited for holding and supporting said bags and said containers while said bags or said containers are being filled with refuse or goods, said mechanical bag holder comprising:

(A) a curved rigid vertical support structure comprising an upper curved segment with a topmost point,

(1) said curved segment having a first transitional point and a second transitional point, said curved rigid vertical support structure further comprising

(a) a first straight leg and a second straight leg,

(b) each said first straight leg and said second straight leg being contiguously connected to said first transitional point and said second transitional point respectively,

(2) said first straight leg and said second straight leg being parallel to each other when said curved rigid vertical support structure is standing upright,

(B) a first cylindrical transverse polyvinylchloride hollow piping, said first cylindrical transverse polyvinylchloride hollow piping comprising

(1) a first end and a second end,

(a) said first end physically attached to said first straight leg and said second end physically attached to said second straight leg,

(2) said first cylindrical transverse polyvinylchloride hollow piping being at a right angle to said curved rigid vertical support structure,

(C) a first straight segment extending within said first cylindrical transverse polyvinylchloride hollow piping,

(1) said straight segment comprising a first angled arm and a second angled arm,

(a) said first angled arm emerging from said first end of said first cylindrical transverse polyvinylchloride hollow piping and

(b) said second angled arm emerging from said second end of said first cylindrical transverse polyvinylchloride hollow piping,

whereby said curved rigid vertical support structure supports said straight segment within said first transverse polyvinylchloride hollow cylindrical piping such that said straight segment can be swiveled within said first transverse polyvinylchloride hollow cylindrical piping, thereby causing said first angled arm and said second angled arm to be moved vertically or laterally while supporting said bag or container.

US 6,330,991 B1

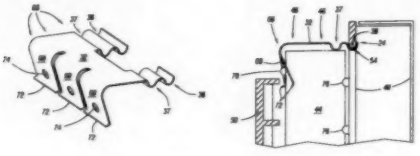
APPARATUS FOR MOUNTING AN ELEMENT

Craig L. Boe, Nampa, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 23, 1997, Appl. No. 877,716

Int. Cl. F16M *11/00*

U.S. Cl. 248—200 **4 Claims**



1. An apparatus for mounting an element on a chassis, the element having a bump, the apparatus comprising:

a) a card guide assembly having an opening for receiving said element;

b) a clip for pivotably connecting to said chassis, said clip adapted to pivot between a first position for engaging with said bump and for holding said element in said card guide assembly, and a second position for free movement of said element through said opening;

wherein said clip has a furrowed edge forming a pivoting joint when said furrowed edge is inserted in a slot in said chassis.

US 6,330,992 B1

DEVICE FOR SUPPORTING A CAMERA ON A SURFACE

Robert D. Swayhoover, and Patricia A. Swayhoover, both of 87-08 Justice Ave., Apt. 11E, Elmhurst, N.Y. 11373

Filed Dec. 30, 1999, Appl. No. 476,169

Int. Cl. A47B *96/06*; **E04G** *3/00*; **F16B** *1/00*; **G09F** *7/18*

U.S. Cl. 248—230.8 **2 Claims**

1. A device for supporting a camera on one of a surface with a contour and an object with a contour, comprising:

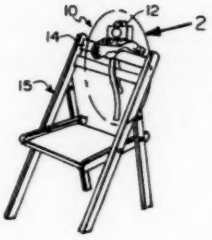
a) a cushion for supporting the camera; said cushion having:

i) a lower surface for facing one of the surface and the object;

ii) an upper surface for facing the camera; and

iii) at least one corner;

b) a strap assembly extending from said cushion; said strap assembly comprising a strap extending from said lower surface of said cushion, at diametrically opposite sides thereof, and at different lengths therefrom: said strap of said strap assembly having:



i) an upper surface;

ii) a lower surface; and

iii) a pair of free terminal ends; said upper surface of said strap having a first portion of hook and loop fasteners thereon being disposed on each of said pair of free terminal ends of said strap; said lower surface of said strap having a second portion of hook and loop fasteners thereon being disposed on each of said pair of free terminal ends of said strap; said second portion of hook and loop fasteners on one free terminal end of said strap releasably mating with said first portion of hook and loop fasteners on the other free terminal end of said strap so as to allow either free terminal end of said strap to overlap and engage said other free terminal end of said strap when said strap is utilized to hold said cushion on the object, and thereby eliminating a need to think about which free terminal end of said strap has to go on top of the other free terminal end of said strap; and

c) apparatus for releasably attaching the camera to said cushion; said apparatus comprising:

i) a third portion of hook and loop fasteners being disposed centrally on said upper surfaces of said cushion; said cushion further having a socket disposed on said upper surface of said cushion, at one of said at least one corner of said cushion and storing a portion of said apparatus when not in use;

ii) a bolt having:

A) a head; and

B) a threaded shaft extending from said head of said bolt for threadably engaging in the camera; and

iii) a fourth portion of hook and loop fasteners covering said head of said bolt and releasably engaging said third portion of hook and loop fasteners, with said bolt being stored in said pocket on said upper surface of said cushion when not in use.

US 6,330,993 B1

FLAT PANEL DISPLAY DEVICE HAVING A WIDE ADJUSTING RANGE OF A VISUAL ANGLE

Chang-Ho Cho, Incheon-si, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 31, 1998, Appl. No. 223,761

Claims priority, application Rep. of Korea, Dec. 31, 1997, 97-44775

This patent is subject to a terminal disclaimer.

Int. Cl. A47G *29/00*

U.S. Cl. 248—371 **20 Claims**

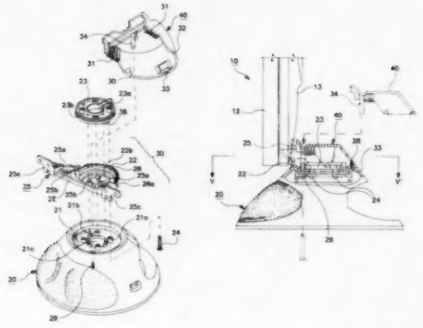
1. A flat panel display device comprising:

a display unit to display an image;

a stand having a circular recess, to support said display unit;

a hinge member including a ring-shaped rotation member rotatably fixed to the circular recess of said stand;

a holder fixed to the circular recess of said stand, to secure the rotation member in said stand;



a bracket case fixed to the rotation member and said display unit;

a stand cap to cover said hinge member; and

a fastener to fix said stand cap to said hinge member.

US 6,330,994 B1

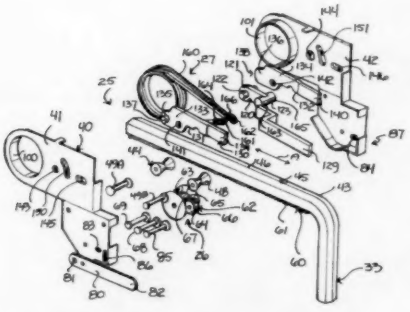
ADJUSTABLE SUPPORT APPARATUS AND ARCHITECTURE FOR ADJUSTING SUPPORT APPARATUS

Paul A. Elio, Phoenix, Ariz., assignor to Elio Engineering, Phoenix, Ariz.

Continuation of application No. 09/092,675, filed on Jun. 5, 1998, now Pat. No. 6,070,938. This application Apr. 15, 2000, Appl. No. 551,986.

Int. Cl. B60N *2/06*

U.S. Cl. 248—429 **7 Claims**



1. Seat track apparatus for reciprocal motion comprising:

a first track element;

a second track element carried by and encircling the first track element, the second track element including a base having a first section and a second section fixedly and immovably attached together around the first track element by portions of an adjustment mechanism, the adjustment mechanism engaging the first track element to permit relative positioning of the first track element and the second track element and completing the encircling of the first track element whereby lateral separation of the second track element from the first track element is prevented; and

mounting structure for mounting a seat to one of the first track element and the second track element.

US 6,330,995 B1

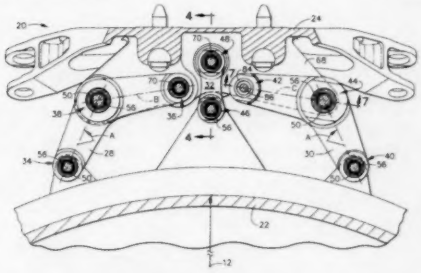
AIRCRAFT ENGINE MOUNT

John A. Mangeiga, North Andover; Christopher J. Wilusz, Peabody, both of Mass., and Cornelius H. Dykhuizen, West Chester, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 29, 2000, Appl. No. 515,171

Int. Cl. F16M *13/00*

U.S. Cl. 248—554 **15 Claims**



1. In a mount for supporting an engine on an aircraft and comprising at least one link joined between said engine and said aircraft, a translating ball joint comprising:

a spherical bearing disposed in an opening in said link;

a pin extending through said spherical bearing;

an first inner bushing disposed on said pin, adjacent to said spherical bearing, said first inner bushing having an outside diameter and an oppositely disposed set of planar surfaces formed on said outside diameter; and

an outer bushing disposed over said inner bushing, said first outer bushing having an inside diameter and an oppositely disposed set of axially extending planar surfaces formed on said inside diameter, each one of said set of planar surfaces formed on said outer bushing slidingly engaging a corresponding one of said set of planar surfaces formed on said first inner bushing.

US 6,330,996 B1

MOUNTING FIXTURE FOR CPU OF A PORTABLE-TYPE COMPUTER SYSTEM

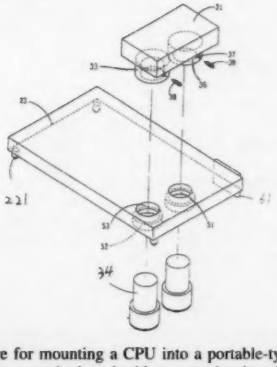
Yu-Shi Yo; Tsung-Hsing Fang, and Teh-Chuan Ou, all of Taipei, Taiwan, assignors to Asustek Computer, Inc., Taipei, Taiwan

Filed Mar. 8, 2000, Appl. No. 520,094

Claims priority, application Taiwan, May 10, 1999, 88207380

Int. Cl. A47F *5/00;* **H05K** *7/02;7/06;7/08;7/10*

U.S. Cl. 248—694 **7 Claims**



1. A fixture for mounting a CPU into a portable-type computer system having a motherboard with a mounting location, comprising:

first means, responsive to a force, for re-directing said force to a predetermined force-taking location of the CPU;

second means for supporting the first means, the second means having a through-hole;

third means, connected to the second means, for positioning the CPU onto the mounting location such that a predetermined alignment relationship between the CPU and the mounting location is maintained.

US 6,330,997 B2

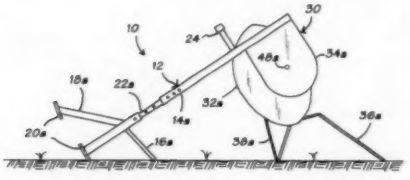
LIFTING APPARATUS FOR SMALL VEHICLES

Vinson L. McGlaun, 2709 Hillside La., Augusta, Ga. 30909, and Larry D. Stockdaile, 5314 Woodland Dr., Grovetown, Ga. 30813

Provisional application No. 60/190,252, filed on Mar. 17, 2000. This application Mar. 16, 2001, Appl. No. 811,202.

Int. Cl. F16M *13/00*

U.S. Cl. 254—94 **33 Claims**



1. A lifting apparatus for use with a vehicle having forward wheels and rear wheels, said apparatus comprising:

frame means;

web means attached to said frame means, said web means positionable so that, as said wheels of said vehicle are driven over said web means, a weight of said vehicle on said web means deters slippage of said apparatus; and

lift means pivotably attached to said frame means, said lift means adapted for receiving said forward wheels therein so that, when said forward wheels are secured in said lift means and said vehicle is driven forwards with said rear wheels on said web means, said lift means pivots from a down position to an up position wherein a forward end of said vehicle is raised above ground level.

US 6,330,998 B1

PLASTIC SHEATH PRODUCTS FOR STUDDED STEEL T-POSTS, AND PRODUCTION

Christopher H. W. Roy, Drury, Mo., assignor to Outdoor Technologies, L.L.C., Drury, Mo.

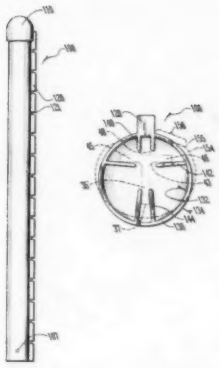
Provisional application No. 60/132,775, filed on May 6, 1999. This application Nov. 8, 1999, Appl. No. 436,312. This patent is subject to a terminal disclaimer.

Int. Cl. E04H *17/10*

U.S. Cl. 256—19 **16 Claims**

1. A combination studded steel T-post and an extruded plastic sheath for covering the studded steel T-post, the combination comprising:

a studded steel T-post having generally a T-shaped cross-section defined by a stem and a haunched flange having a belly side and a dorsal side, wherein the stem inserts into the belly side of the haunched flange and wherein the flange has opposite eave portions which extend from origins in the stem insertion to respective free edges, and extending down the lengthwise axial run of the dorsal side there is formed a row of generally uniformly spaced studs; and wherein said T-post the has such a size that the T-post is capable of sliding inside a hole having a nominal inside diameter D; with,



an extruded plastic sheath for covering the studded steel T-post, comprising:

a tubular wall having inner and outer sides and surrounding a main lumen sized sufficiently large to allow the T-post to slide axially therein;

a series of rails which project into the lumen from origins on the inner side of the tubular wall, wherein the series of rails comprise a pair of generally parallel temple rails for defining a close-fitting slideway for the row of studs, a pair of cooperating base rails defining a close-fitting slideway for the stem of the T-post and being located generally diametrically opposite the temple rails, and, a pair of generally opposed eave rails intermediate the temple and base rails for guiding the belly sides of the opposite eaves;

wherein said tubular wall is sized to define a nominally round conduit having a nominal inside diameter in excess of 30% greater than D in order to facilitate sliding of the extrusion-produced sheath over the T-post and thereby avoid undue binding or sticking.

US 6,330,999 B2

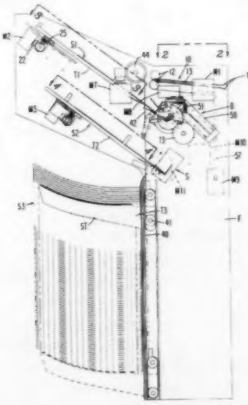
SET BINDING, STAPLING AND STACKING APPARATUS

Peter M Coombs, Tustin, and James R. Seay, Lake Forest, both of Calif., assignors to Graoco (Japan) Ltd, Tokyo, Japan

Filed May 14, 1998, Appl. No. 78,202

Int. Cl. B42C *1/12*

U.S. Cl. 270—58.18 **42 Claims**



1. Set finishing and stacking apparatus for sheets fed from a reproduction machine comprising: means for providing a first

finishing station for receiving sheets fed into the apparatus, means for providing a second finishing station below said first finishing station, stacker means below said second finishing station, one of said finishing stations including means for applying a thermal binding strip to a set of sheets supplied thereto, the other of said finishing stations having means for stapling a set of sheets supplied thereto, said first finishing station including a multiple part tray and means for moving the parts of said tray from a position for receiving a set of sheets laterally to a position at which the set of sheets passes downwardly through said tray of said first finishing station to said second finishing station, said second finishing station including a multiple part tray and means for moving the parts of said tray from a position for receiving a set of sheets to a position at which the set of sheets passes downwardly through said tray of said second finishing station to said stacker means.

US 6,331,000 B1

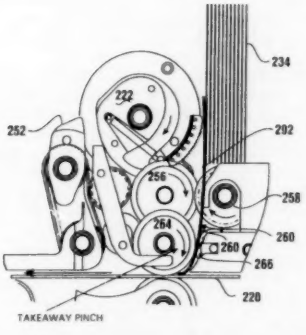
CURRENCY RECYCLING SYSTEM AND METHOD FOR AUTOMATED BANKING MACHINE

William Daniel Beskitt, Cuyahoga Falls; Michael J. Harty; Jeffrey Eastman, both of North Canton, and Richard J. Phelps, Stow, all of Ohio, assignors to Diebold, Incorporated, North Canton, Ohio

Provisional application No. 60/100,758, filed on Sep. 17, 1998. This application Sep. 7, 1999, Appl. No. 390,929.

Int. Cl. B65H *5/22*

U.S. Cl. 271—3.01 **50 Claims**



1. An automated banking machine apparatus comprising:

a rotating member;

a gripper portion in movable supporting connection with the rotating member, wherein the gripper portion moves relative to the rotating member to engage an incoming sheet adjacent to the rotating member in an incoming sheet path in a first rotational position of the rotating member, and to release the incoming sheet into a sheet stack in a second rotational position of the rotating member;

a picker portion in movable supporting connection with the rotating member, wherein the picker portion engages an outgoing sheet in a third rotational position of the rotating member, and wherein movement of the picker portion in a first rotational direction from the third rotational position moves the outgoing sheet from the stack into an outgoing sheet path.

US 6,331,001 B1

SHEET FEEDING MACHINE

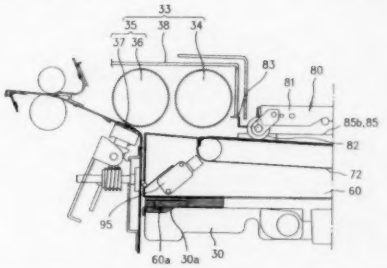
Hideyuki Sekiguchi, Ibaraki-ken, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Mar. 6, 2000, Appl. No. 519,619

Claims priority, application Japan, Mar. 16, 1999, 11-070379

Int. Cl. B65H *3/44;5/26*

U.S. Cl. 271—9.01 **11 Claims**



1. A sheet feeding machine comprising:

a sheet feeding table which is vertically movable and capable of supporting a plurality of first recording sheets thereon,

first sheet feeding means movably situated above said sheet feeding table, said first sheet feeding means feeding said first recording sheets successively from a topmost sheet as said sheet feeding table with said first recording sheets moves upward,

a base body detachably attached to said sheet feeding table, said base body supporting a plurality of second recording sheets thereon, and

second sheet feeding means situated on said base body and feeding said second recording sheets successively from a bottommost sheet so that when said base body is attached to said sheet feeding table, said second recording sheet is fed by said second sheet feeding means and is transferred further by said first feeding means as conveying means.

US 6,331,002 B1

SHEET FEEDING APPARATUS

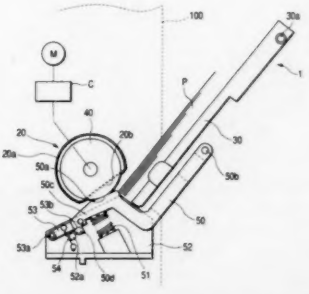
Hiroshi Yoshino, Kawasaki; Jun Katayanagi, Musashino; Haruyuki Yanagi, Machida; Shinya Sonoda, Yokohama, and Yasuyuki Asai, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 2000, Appl. No. 627,451

Claims priority, application Japan, Jul. 29, 1999, 11-215888

Int. Cl. B65H *3/06*

U.S. Cl. 271—117 **15 Claims**



1. A sheet feeding apparatus for separating and feeding sheets one by one, comprising:

sheet stacking means for supporting sheets;

first means, responsive to a force, for re-directing said force to a predetermined force-taking location of the CPU;

second means for supporting the first means, the second means having a through-hole;

third means, connected to the second means, for positioning the CPU onto the mounting location such that a predetermined alignment relationship between the CPU and the mounting location is maintained.

US 6,330,997 B2

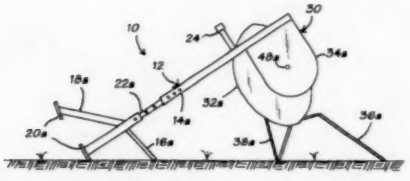
LIFTING APPARATUS FOR SMALL VEHICLES

Vinson L. McGlaun, 2709 Hillside La., Augusta, Ga. 30909, and Larry D. Stockdaile, 5314 Woodland Dr., Grovetown, Ga. 30813

Provisional application No. 60/190,252, filed on Mar. 17, 2000. This application Mar. 16, 2001, Appl. No. 811,202.

Int. Cl. F15M *13/00*

U.S. Cl. 254—94 **33 Claims**



1. A lifting apparatus for use with a vehicle having forward wheels and rear wheels, said apparatus comprising:

frame means;

web means attached to said frame means, said web means positionable so that, as said wheels of said vehicle are driven over said web means, a weight of said vehicle on said web means deters slippage of said apparatus; and

lift means pivotably attached to said frame means, said lift means adapted for receiving said forward wheels therein so that, when said forward wheels are secured in said lift means and said vehicle is driven forwards with said rear wheels on said web means, said lift means pivots from a down position to an up position wherein a forward end of said vehicle is raised above ground level.

US 6,330,998 B1

PLASTIC SHEATH PRODUCTS FOR STUDDED STEEL T-POSTS, AND PRODUCTION

Christopher H. W. Roy, Drury, Mo., assignor to Outdoor Technologies, L.L.C., Drury, Mo.

Provisional application No. 60/132,775, filed on May 6, 1999. This application Nov. 8, 1999, Appl. No. 436,312.

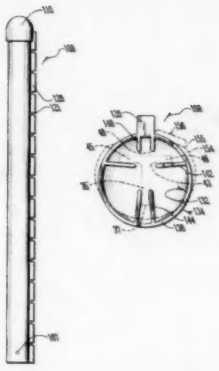
This patent is subject to a terminal disclaimer.

Int. Cl. E04H *17/10*

U.S. Cl. 256—19 **16 Claims**

1. A combination studded steel T-post and an extruded plastic sheath for covering the studded steel T-post, the combination comprising:

a studded steel T-post having generally a T-shaped cross-section defined by a stem and a haunched flange having a belly side and a dorsal side, wherein the stem inserts into the belly side of the haunched flange and wherein the flange has opposite eave portions which extend from origins in the stem insertion to respective free edges, and extending down the lengthwise axial run of the dorsal side there is formed a row of generally uniformly spaced studs; and wherein said T-post the has such a size that the T-post is capable of sliding inside a hole having a nominal inside diameter D; with,



an extruded plastic sheath for covering the studded steel T-post, comprising:

a tubular wall having inner and outer sides and surrounding a main lumen sized sufficiently large to allow the T-post to slide axially therein;

a series of rails which project into the lumen from origins on the inner side of the tubular wall, wherein the series of rails comprise a pair of generally parallel temple rails for defining a close-fitting slideway for the row of studs, a pair of cooperating base rails defining a close-fitting slideway for the stem of the T-post and being located generally diametrically opposite the temple rails, and, a pair of generally opposed eave rails intermediate the temple and base rails for guiding the belly sides of the opposite eaves;

wherein said tubular wall is sized to define a nominally round conduit having a nominal inside diameter in excess of 30% greater than D in order to facilitate sliding of the extrusion-produced sheath over the T-post and thereby avoid undue binding or sticking.

US 6,330,999 B2

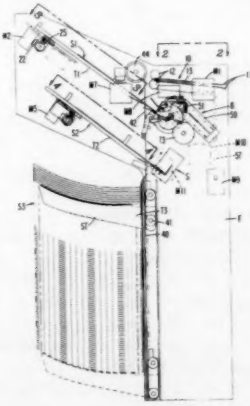
SET BINDING, STAPLING AND STACKING APPARATUS

Peter M Coombs, Tustin, and James R. Seay, Lake Forest, both of Calif., assignors to Graoco (Japan) Ltd, Tokyo, Japan

Filed May 14, 1998, Appl. No. 78,202

Int. Cl. B42C *1/12*

U.S. Cl. 270—58.18 **42 Claims**



1. Set finishing and stacking apparatus for sheets fed from a reproduction machine comprising: means for providing a first

finishing station for receiving sheets fed into the apparatus, means for providing a second finishing station below said first finishing station, stacker means below said second finishing station, one of said finishing stations including means for applying a thermal binding strip to a set of sheets supplied thereto, the other of said finishing stations having means for stapling a set of sheets supplied thereto, said first finishing station including a multiple part tray and means for moving the parts of said tray from a position for receiving a set of sheets laterally to a position at which the set of sheets passes downwardly through said tray of said first finishing station to said second finishing station, said second finishing station including a multiple part tray and means for moving the parts of said tray from a position for receiving a set of sheets to a position at which the set of sheets passes downwardly through said tray of said second finishing station to said stacker means.

US 6,331,000 B1

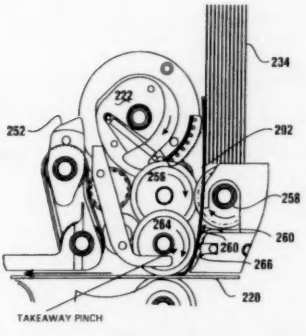
CURRENCY RECYCLING SYSTEM AND METHOD FOR AUTOMATED BANKING MACHINE

William Daniel Beskitt, Cuyahoga Falls; Michael J. Harty; Jeffrey Eastman, both of North Canton, and Richard J. Phelps, Stow, all of Ohio, assignors to Diebold, Incorporated, North Canton, Ohio

Provisional application No. 60/100,758, filed on Sep. 17, 1998. This application Sep. 7, 1999, Appl. No. 390,929.

Int. Cl. B65H *5/22*

U.S. Cl. 271—3.01 **50 Claims**



1. An automated banking machine apparatus comprising:

a rotating member;

a gripper portion in movable supporting connection with the rotating member, wherein the gripper portion moves relative to the rotating member to engage an incoming sheet adjacent to the rotating member in an incoming sheet path in a first rotational position of the rotating member, and to release the incoming sheet into a sheet stack in a second rotational position of the rotating member;

a picker portion in movable supporting connection with the rotating member, wherein the picker portion engages an outgoing sheet in a third rotational position of the rotating member, and wherein movement of the picker portion in a first rotational direction from the third rotational position moves the outgoing sheet from the stack into an outgoing sheet path.

US 6,331,001 B1

SHEET FEEDING MACHINE

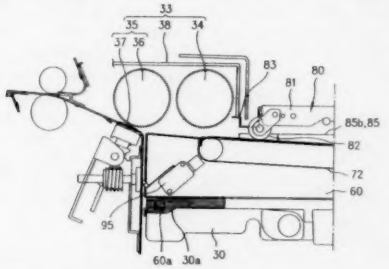
Hideyuki Sekiguchi, Ibaraki-ken, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Mar. 6, 2000, Appl. No. 519,619

Claims priority, application Japan, Mar. 16, 1999, 11-070379

Int. Cl. B65H *3/44;5/26*

U.S. Cl. 271—9.01 **11 Claims**



1. A sheet feeding machine comprising:

a sheet feeding table which is vertically movable and capable of supporting a plurality of first recording sheets thereon,

first sheet feeding means movably situated above said sheet feeding table, said first sheet feeding means feeding said first recording sheets successively from a topmost sheet as said sheet feeding table with said first recording sheets moves upward,

a base body detachably attached to said sheet feeding table, said base body supporting a plurality of second recording sheets thereon, and

second sheet feeding means situated on said base body and feeding said second recording sheets successively from a bottommost sheet so that when said base body is attached to said sheet feeding table, said second recording sheet is fed by said second sheet feeding means and is transferred further by said first feeding means as conveying means.

US 6,331,002 B1

SHEET FEEDING APPARATUS

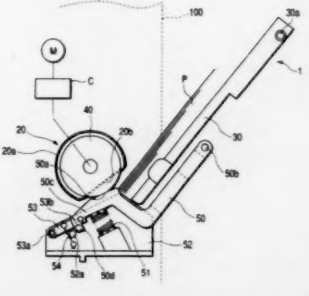
Hiroshi Yoshino, Kawasaki; Jun Katayanagi, Musashino; Haruyuki Yanagi, Machida; Shinya Sonoda, Yokohama, and Yasuyuki Asai, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 2000, Appl. No. 627,451

Claims priority, application Japan, Jul. 29, 1999, 11-215888

Int. Cl. B65H *3/06*

U.S. Cl. 271—117 **15 Claims**



1. A sheet feeding apparatus for separating and feeding sheets one by one, comprising:

sheet stacking means for supporting sheets;

a sheet feeding roller, provided at its periphery with a cylindrical surface and a cut-out portion, for feeding out the sheet stacked on said sheet stacking means by means of said cylindrical surface by rotating;

separation means, capable of abutting against said sheet feeding roller, for separating the sheets one by one between said cylindrical surface of said sheet feeding roller and said separation means;

spacing means for spacing apart said sheet feeding roller and said separation means when said cut-out portion of said sheet feeding roller is opposed to said separation means;

biasing means for biasing said separation means to urge it against said sheet feeding roller or said spacing means; and

conveying load reducing means for reducing a conveying load acting on the sheet being fed, by making an abutment force for pinching the sheet between said spacing means and said separation means smaller than an abutment force for pinching the sheet between said cylindrical surface and said separation means.

US 6,331,003 B1

RECORDING MEDIUM DISCHARGING APPARATUS AND IMAGE FORMING APPARATUS PROVIDED THEREWITH

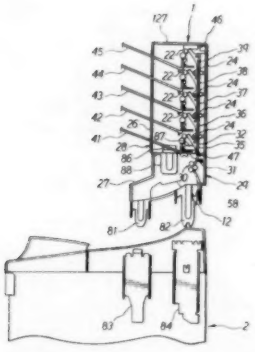
Eiji Yokota; Atsuo Hirose; Kazuhiko Takagi; Hiroyuki Kashima, and Kazumasa Makino, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of application No. 09/253,551, filed on Feb. 22, 1999, which is a continuation-in-part of application No. 09/236,466, filed on Jan. 25, 1999. This application Aug. 30, 1999, Appl. No. 385,035.

Claims priority, application Japan, Jan. 27, 1998, 10-013686; Feb. 16, 1998, 10-032471; Feb. 23, 1998, 10-040213; Mar. 18, 1999, 11-073511; Mar. 18, 1999, 11-073512; Mar. 18, 1999, 11-073513

Int. Cl. B65H *31/24*

U.S. Cl. 271—290 **30 Claims**



18. A recording medium discharging apparatus which can be mounted on top of an image forming apparatus, the discharging apparatus comprising:

a body including a recording medium storer; and

at least three extensions extending downward from the body for mounting the body therewith on the image forming apparatus;

the bottoms of the extensions self supporting the discharging apparatus on a horizontal plane when the discharging apparatus is dismounted from the image forming apparatus.

US 6,331,004 B1

IMAGE RECORDING DEVICE HAVING A REVERSING SECTION

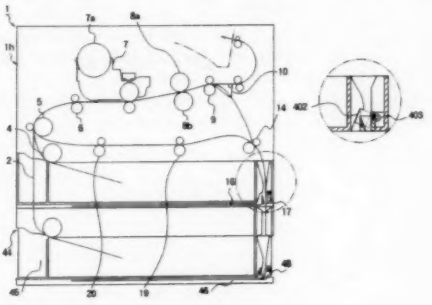
Yasuyuki Katou, and Kiyoshi Matsuda, both of Tokyo, Japan, assignors to Oki Data Corporation, Tokyo, Japan

Filed Oct. 22, 1998, Appl. No. 177,020

Claims priority, application Japan, Oct. 24, 1997, 9-292656

Int. Cl. B65H *39/10;* **G03G** *15/00*

U.S. Cl. 271—301 **16 Claims**



1. An image recording device comprising:

a paper supply section;

a paper transport path along which recording paper supplied from the paper supply section is transported;

an image forming section provided on the paper transport path;

a reversing section for reversing the recording paper, wherein said paper supply section includes a paper cassette which has a first end from which the recording paper is picked up, and a second end opposite to said first end, said reversing section comprising:

a pair of reversing rollers rotating forward and backward, while holding recording paper which is transported from the paper transport path having passed the image forming section, and which is to be reversed,

a reversing path in which the recording paper having passed the reversing rollers is reciprocated, and which is formed at least at the second end of the paper supply section, and

a returning path formed over the paper supply section for transporting the recording paper to the paper transport path, the recording paper having been reversed, said reversing path including a first guide which is integral with the paper cassette, wherein the recording paper reversed by the reversing section is passed through said returning path, and guided to the paper transport path.

US 6,331,005 B1

TACTICAL TENNIS

Dominic L. Ozanne, II, 27900 S.Woodland Rd., Pepper Pike, Ohio 44124

Filed Dec. 9, 1999, Appl. No. 457,144

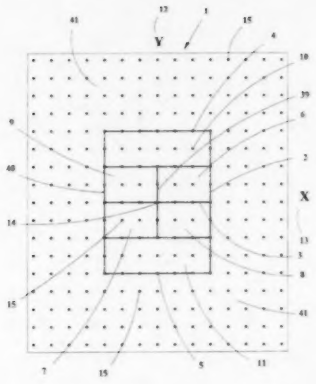
Int. Cl. A63F *3/00*

U.S. Cl. 273—244 **3 Claims**

1. A process for teaching the game of tennis employing a game board having indicia thereon, said indicia representing a tennis court including advantage courts, deuce courts, back courts, fore courts, a net, sidelines, baselines, axes of ordinates and axes of abscissas, a pair of dice with each die having indicia thereon representing numerals 1, 2, 3, 4, 5 and 6, a first playing piece for marking the position of a first player, a second playing piece for marking the position of a second player, and a third playing piece for marking the position of the tennis ball, comprising the steps of:

rolling the dice by said first player to obtain a number which is the sum of each die;

rolling the dice by said second player to obtain a number which is the sum of each die;



comparing the numbers obtained by each player rolling the dice so as to determine which player has the largest number thereby defining the server;

choosing positions on said game board by each of said players from which serves and defenses will be made;

placing markers on the respective positions chosen by said server and said defender:

rolling said dice by said first player (server) to obtain a sum of said dice;

determining if said sum of said dice is sufficiently large to serve said third piece from the position of said server beyond said net and into and/or into and through the deuce court of said defender, and, if said sum of said dice is not sufficiently large to serve said third piece beyond said net and into and/or into and through the deuce court of said defender, then said server rolls said dice again to obtain a new sum of said dice;

advancing, moving and marking said third piece according to said axes of ordinates and abscissas on said tennis court by said server according to the sum of said dice if one of said sums is sufficiently large;

losing a point to said defender if neither of said rolls of said dice are sufficiently large to advance said third piece of said first player beyond said net into and/or into and through the deuce court of said defender;

repeating said previous steps until said server is able to serve into and/or into and through the deuce court of said defender;

rolling the dice by said defender to determine if s/he will be able to return the serve;

determining if said sum of said dice is sufficiently large to move to and return said third piece beyond said net and into and into and/or through said court of said server;

moving to said third piece and placing said defender's marker on said game board accordingly and moving and placing said third piece into and/or into and through said court of said server if said sum of said dice is sufficiently large to return said third piece;

scoring a point for said server if said sum of said dice rolled by said second player is not sufficiently large to move to or return said third piece into and/or into and through said court of said server;

rolling the dice by said server if said third piece was returned to and/or to and through said court of said server said defender; and,

repeating said previous steps to determine the movement of said third piece and scoring for said players.

US 6,331,006 B1

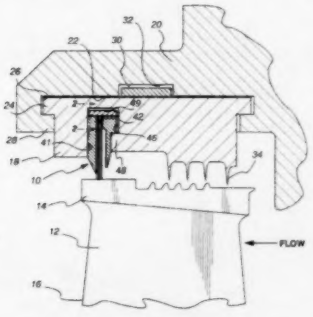
BRUSH SEAL MOUNTING IN SUPPORTING GROOVE USING FLAT SPRING WITH BIFURCATED END

Frederick G. Baily, Ballston Spa; Lawrence E. Rentz, Clifton Park; Klaus M. Retzlaff, Schenectady, and Norman A. Turnquist, Carlisle, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 25, 2000, Appl. No. 491,598

Int. Cl. F16J *15/447;15/54*

U.S. Cl. 277—355 **11 Claims**



1. A brush seal and spring combination for disposition between a first rotatable component and a second component fixed against rotation, comprising:

an arcuate brush seal segment for disposition between the first component and the second component and including a pair of arcuate plates, a plurality of brush bristles projecting therefrom having free ends for sealing with the first rotatable component and a weld along the outer face of said plates securing the plates and bristles to one another, one of said plates having a recess along a radially outer face thereof, and an elongated leaf spring for disposition between the brush seal segment and the second component and having a radially inwardly directed tab for engaging in said recess, said recess and tab being spaced from said weld.

US 6,331,007 B1

SPORTING EQUIPMENT BINDING APPARATUS

Jonathan Bryce, Cottage Point, Australia, assignor to Griplock Pty Ltd., Australia

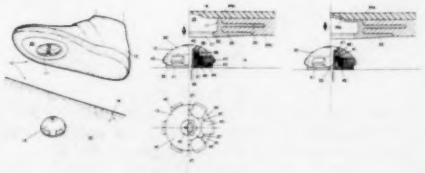
PCT No. PCT/AU97/00375, § 371 Date Dec. 2, 1998, § 102(e) Date Dec. 2, 1998, PCT Pub. No. WO97/48301, PCT Pub. Date Dec. 24, 1997

PCT Filed Jun. 13, 1997, Appl. No. 194,730

Claims priority, application Australia, Jun. 14, 1996, P00432

Int. Cl. A63C *1/99*

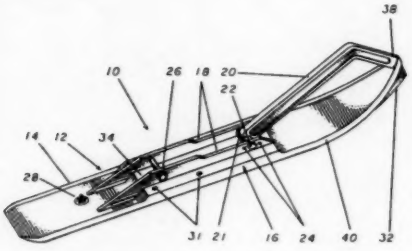
U.S. Cl. 280—11.3 **18 Claims**



1. A binding apparatus for use with an item of sports equipment, the binding apparatus including a first part adapted for attachment to an article of footwear and a second part adapted for attachment to the item of sports equipment, one of said first part and said second part including a recess and the other of said first part and said second part including a protuberance adapted to be pivotally received in said recess, said first and second parts having complementary securing means for releasably securing said protuberance

in said recess upon said protuberance reaching therein a predetermined engagement, said securing means being adapted, in use, to allow release of said first part from said second part exclusively upon application of an upwardly directed breakaway force, wherein said securing means is adapted to releasably secure said protuberance in said recess for sideways pivoting movement of said article of footwear relative to said item of sports equipment.

US 6,331,008 B2
ONE PIECE MOLDED SKI APPARATUS
Dale DeWayne Cormican, Rte. 1, Box 153, Mentor, Minn. 56736
Filed Aug. 7, 1998, Appl. No. 130,892
Int. Cl. A63C *5/07;11/00;* **B62M** *27/02*
U.S. Cl. 280—22 **3 Claims**



1. A one piece base, adjustable flex ski for use on a vehicle, said ski comprising:

a molded one piece flexible elongate ski having an upper surface, said first portion and said second portion are spaced apart from each other a bottom surface, and a first portion and a second portion extending upwardly from said upper surface;

a first aperture and opposite said first aperture within said first portion;

a second aperture within said second portion concentric with said first aperture;

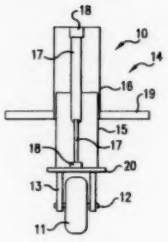
a first bushing member positioned within said first aperture;

a second bushing member position within said second aperture, wherein said bushing members receive a pin member, wherein a mount nut is secured to an end of said pin member for securing said ski to said vehicle; and

wherein said first aperture and said second aperture each have a first portion having a first diameter and a second portion having a second diameter wherein said second diameter is larger than said first diameter, and wherein said first bushing member and said second bushing member each have a first segment corresponding to said first portion and a second segment corresponding to said second portion of said apertures, wherein a mount not is secured to an end of said pin member.

US 6,331,009 B1
CONTROL WHEEL ASSEMBLY FOR TROLLEYS
Wesley Wilkinson, South Oakleigh, Australia, assignor to Work Systems Technology Pty Ltd., Oakleigh, Australia
PCT No. PCT/AU96/00246, § 371 Date Oct. 27, 1997, § 102(e) Date Oct. 27, 1997, PCT Pub. No. WO96/33900, PCT Pub. Date Oct. 31, 1996
PCT Filed Apr. 26, 1996, Appl. No. 945,017
Claims priority, application Australia, Apr. 28, 1995, PN2658
Int. Cl. B62B *3/00*
U.S. Cl. 280—33.996 **2 Claims**

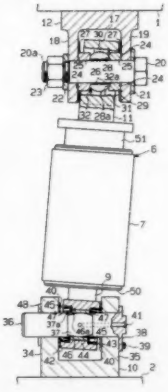
1. A trolley control wheel assembly adapted to be fitted to a trolley having a longitudinal axis of travel and an array of castors having respective castor wheels, said assembly comprising:



a fixed wheel adapted to be disposed in use on a trolley in a vicinity of one of a load center of the trolley and a center of the array of castors, and

a strut assembly independent of the castors and operable to provide controlled contact between the fixed wheel and a surface on which the trolley is intended to travel, said strut assembly including a first part connected to a member which rotatably supports the fixed wheel and a second part which is fixed in use to the trolley, said first and second parts being telescopically guided with respect to each other and being configured to prevent relative rotation of said first and second parts to thereby maintain the fixed wheel in a fixed direction with respect to the trolley when in an in use position on a trolley.

US 6,331,010 B1
STRUCTURE FOR SUPPORTING CYLINDERS
Kenji Chino, and Yoshihisa Iwanaga, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
Filed Jul. 22, 1998, Appl. No. 120,418
Claims priority, application Japan, Jul. 23, 1997, 9-197206
Int. Cl. B60G *7/00*
U.S. Cl. 280—124.112 **5 Claims**



1. An industrial vehicle having a frame and an axle pivotally connected with the frame, said vehicle comprising:

a center shaft about which the axle pivots, said center shaft having an axis, wherein said frame is connected with the axle by the center;

a first bracket fixed to the frame;

a second bracket fixed to the axle;

a cylinder located between the frame and the axle, said cylinder being arranged to selectively extend and retract to absorb the pivotal motion of the axle and being pivotable about axes that are normal to the axis of the center shaft, said cylinder having

(i) a first end pivotally coupled to the first bracket and including a first through hole having an inner surface; (ii) a second end pivotally coupled to the second bracket; (iii) a cylinder case; (iv) a piston located in the case; (v) a first piston rod connected with the piston and slidably connected to the first end; (vi) a second piston rod connected with the second end; and (vii) two hydraulic chambers selectively receiving and discharging hydraulic fluid to extend and retract the cylinder, respectively, wherein the piston is located between the two hydraulic chambers, and the piston has a first pressure-receiving area that faces one of the two hydraulic chambers and a second pressure-receiving area that faces the other of the two hydraulic chambers, and wherein the first pressure-receiving area is substantially equal in size to the second pressure-receiving area; and

joints that couple the cylinder with the frame and the axle, said joints including:

a first coupler for coupling the first end to the first bracket, said first coupler including: (i) a first support shaft supported by the first bracket, wherein the first support shaft extends through the first through hole; (ii) a collar mounted on the first support shaft, wherein the collar includes a pair of large diameter portions and a small diameter portion located between the large diameter portions; (iii) a convex portion provided with the small diameter portion; and (iv) a concave portion provided with the inner peripheral surface of the first through hole, wherein said concave portion engages and slides with respect to the convex portion; and

a second coupler for coupling the second end to the second bracket.

US 6,331,011 B1

WHEEL GUARD FOR TWO-WHEELED VEHICLES

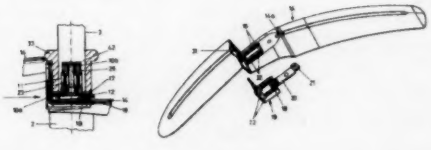
Stefan Feldmann, Sundern, and Oliver Wahl, Essen, both of Germany, assignors to SKS metaplast Scheffer-Klute GmbH, Sundern, Germany

Filed Feb. 11, 2000, Appl. No. 502,955

Claims priority, application Germany, Feb. 15, 1999, 299 02 644

Int. Cl. B62D *25/18*

U.S. Cl. 280—152.1 **13 Claims**



1. Wheel guard for a two-wheeled vehicle, comprising a device for detachably fastening the wheel guard proximate to the fork of the two-wheeled vehicle, characterized by the fact that the fastening device comprises at least one expansion element that can be inserted into a tubular part of the fork and clamped in place, and at least one sliding element that can be joined with the expansion element, wherein the sliding element can be inserted into a groove or rail on the wheel guard, and until it reaches an end position where it is detachably fixed, further characterized by the fact that the sliding element exhibits lateral grooves, into which engage parts of a rail-like part molded onto the wheel guard.

US 6,331,012 B1

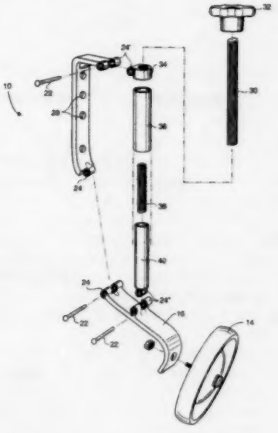
BICYCLE TRAINING WHEEL ASSEMBLY

Al A. Eisenmann, II, 5250 Colodny Dr., #18, Agoura Hills, Calif. 91301, and Peter J. Yatron, 31521 Hipshot Dr., Castaic, Calif. 91384

Provisional application No. 60/180,797, filed on Feb. 7, 2000. This application Nov. 3, 2000, Appl. No. 705,510.

Int. Cl. B62J *15/00*

U.S. Cl. 280—293 **13 Claims**



1. A bicycle training wheel assembly, comprising:

an upper frame segment attachable to a bicycle;

a lower frame segment pivotally attached to the upper frame segment at a first end thereof;

a wheel attached to a second end of the lower frame segment; and

a strut assembly having first and second ends connected to, respectively, the upper and lower frame segments, the strut assembly including a hollow sleeve, a spring disposed therein, and a shaft adjustable relative to one end of the strut assembly and having an end in contact with the spring;

wherein the sleeve includes a first tubular member slidably disposed over at least a portion of a second tubular member to form a substantially enclosed cavity.

US 6,331,013 B2

LIGHTWEIGHT MOTORIZED WHEELCHAIR

Oong Choi, and Fred E. Ingle, both of Lancaster, Pa., assignors to Wheelchair Carrier, Inc., Waterville, Ohio

Continuation of application No. 09/150,652, filed on Sep. 10, 1998, now Pat. No. 6,183,002. This application Dec. 21, 2000, Appl. No. 745,589.

This patent is subject to a terminal disclaimer.

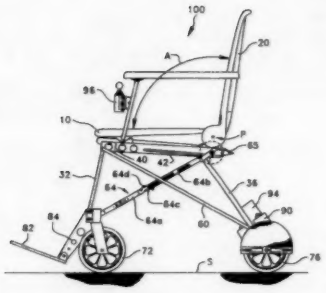
Int. Cl. B62B *1/00*

U.S. Cl. 280—647 **16 Claims**

1. A powered mobility aid comprising a seat having a top surface and a bottom surface and a seat back flexibly engaged therewith, a foldable support frame having a plurality of wheels fixed to the seat, and a power source engaged with at least two of said wheels for applying a driving force to said wheels, wherein said foldable support frame includes:

two track members positioned in a parallel and spaced relationship on the bottom surface of said seat, each track member extending from a point proximate said seat back toward the front edge of the seat;

two front legs, each front leg pivotally engaged with the bottom surface of said seat, a front cross-beam extending between and fixed to said two front legs at a location spaced from said seat and proximate the distal ends of said front legs, two of



said wheels each being attached to said front cross beam and front leg combination proximate the respective distal ends of each of said front legs, at least one front reinforcing member fixed between said two front legs;

two rear legs, each rear leg engaged with a respective track member and being slidable in said respective track member, two of said wheels each being attached respectively proximate the distal end of each of said two rear legs, at least one rear reinforcing member fixed between said two rear legs;

at least one side reinforcing member located on each side of said support frame;

a locking member extending from the bottom surface of said seat and to said front cross beam, said locking member being engaged and locked when said frame is in a fully extended position and also when said frame is in a completely folded position; and

track locking members for locking said rear legs in position on said tracks when said frame is fully extended.

US 6,331,014 B1

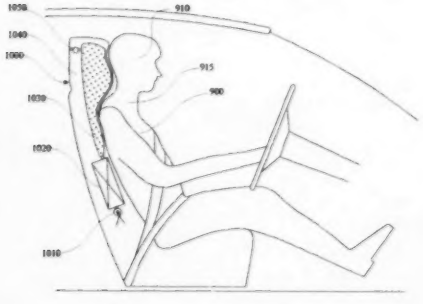
VEHICULAR SEATS INCLUDING OCCUPANT PROTECTION APPARATUS

David S. Breed, Boonton Township, Morris County, N.J., assignor to Automotive Technologies International Inc., Denville, N.J.

Filed Jul. 11, 2000, Appl. No. 613,924

Int. Cl. B60R *21/22*

U.S. Cl. 280—730.1 **32 Claims**



1. A seat for a vehicle for protecting an occupant of the seat in a crash, comprising:

a headrest portion having a cover defining an interior of said headrest portion,

an expandable bladder arranged at least partially in said interior of said cover of said headrest portion, said bladder being arranged to expand within said cover and cause said cover to conform to the shape of a part of the occupant adjacent said cover upon expansion, and

an igniter for causing expansion of said bladder upon receiving a signal that protection for the occupant is desired.

US 6,331,015 B1

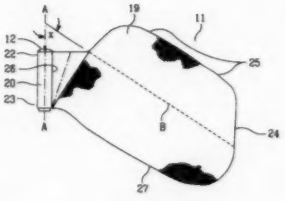
AIR BAG FOLD AND METHOD

Mark Harvey Doxey, Troy, and David Scott Weckesser, Huber Heights, both of Ohio, assignors to Delphi Technologies, Inc., Troy, Mich.

Filed Oct. 13, 1999, Appl. No. 416,798

Int. Cl. B60R *21/16*

U.S. Cl. 280—743.1 **11 Claims**



1. An air bag comprising:

a neck portion having an opening adapted to receive an inflator therein for discharging gas and inflating said air bag, said neck portion extending substantially along a longitudinal axis;

a main body portion extending from said neck portion, said main body portion having a top and bottom edge folded about a main fold line, said main fold line disposed substantially intermediate said top and bottom edges and extending from said neck portion to an outer edge of said main body portion opposite said neck portion, said main fold line extending at an acute angle relative to said longitudinal axis and substantially parallel to said top and bottom edges;

a triangular-shaped intermediate portion between said neck portion and said main body portion, said intermediate portion disposing said main fold line at said acute angle with respect to said longitudinal axis of said neck portion;

wherein said main body portion further comprises a plurality of accordion folds along said main fold line forming a stack to compact said folded main body portion to a position adjacent said neck portion.

US 6,331,016 B1

STABILIZER SYSTEM FOR TRAILERS

Johnny M. Wallace, and Richard Hawk, both of Lewisville, Tex., assignors to Solid As A Look RV Stabilizer System, Inc, Lewisville, Tex.

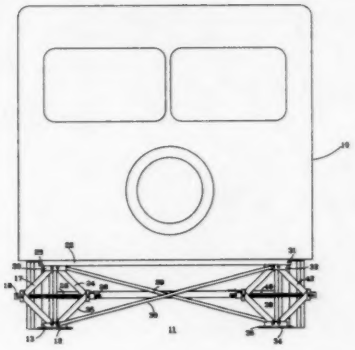
Filed Feb. 22, 2000, Appl. No. 507,662

Int. Cl. B60S *9/02*

U.S. Cl. 280—763.1 **11 Claims**

6. A stabilization system for mounting on the underside of a trailer, comprising:

a rail for mounting on the underside of a trailer;

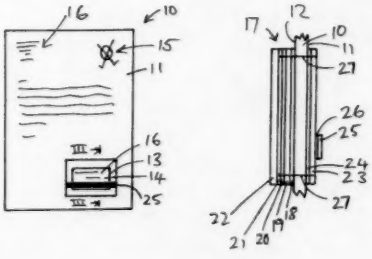


a pair of adjustable spaced apart supports, each support adjustable independent of the other and slidably mounted in said rail and attached to each other with cross braces.

US 6,331,017 B1
PAPER FORMS/DOCUMENTS

Stephen Arthur Walters, Bristol, and John Finch, Bradley Stoke, both of United Kingdom, assignors to Continu-Forms Holdings PLC, Radstock, United Kingdom

Filed Sep. 30, 1999, Appl. No. 409,281
Claims priority, application United Kingdom, Sep. 30, 1998, 9821117
Int. Cl. B42D *15/00*
U.S. Cl. 283—62 **17 Claims**



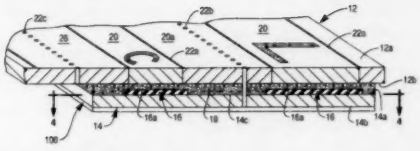
1. A form having front and reverse sides and incorporating:
a sheet of printable material adapted to have data printed on at least one of the front and reverse sides of the sheet;
a removable portion which incorporates part of said sheet and has a first sealing layer applied to the front side thereof and a second sealing layer applied to the reverse side thereof; and
a data carrier provided on at least one side of said removable portion for recordably receiving machine readable data;
wherein said removable portion is defined by a die cut that penetrates said sheet.

US 6,331,018 B1
LABEL SHEET

Joseph D. Roth, Springboro, Ohio, and Wayne D. Finster, Viroqua, Wis., assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 30, 1999, Appl. No. 343,995
Int. Cl. B65D *27/06*
U.S. Cl. 283—81 **8 Claims**

1. A label sheet comprising

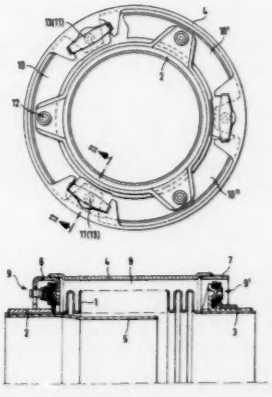


a) an overlay having at least one label cut therethrough, said overlay having a front side capable of receiving print and a rear side with a high adhesion surface capable of having an adhesive bonded thereto,
b) a liner comprising
i) a front side having a high adhesion surface capable of having an adhesive bonded thereto and a printed image positioned on a portion thereof which is covered low adhesion surface, and
ii) a backside with both an opaque ink receptive coating and a printed image positioned thereon, wherein the opaque ink receptive coating is aligned with the printed image positioned on the front side of said liner and the printed image on the back side of said liner is positioned on said opaque ink receptive coating, and
an adhesive layer which bonds the rear side of said overlay to the front side of said liner, wherein the liner and overlay are aligned such that the labels cut in the overlay overlap the release layer on the front side of said liner.

US 6,331,019 B1
CONDUIT VIBRATION DECOUPLING DEVICE FOR USE IN EXHAUST SYSTEMS

Werner Friess, München; Harald Jahnel, Geretsried; Christian Vogt, Icking, and Dietmar Morgner, München, all of Germany, assignors to Feodor Burgmann Dichtungswerke GmbH & Co., Wolfratshausen, Germany

Filed Nov. 18, 1999, Appl. No. 442,737
Claims priority, application European Pat. Off., Dec. 3, 1998, 98122572
Int. Cl. F16L *55/033;51/02*
U.S. Cl. 285—49 **13 Claims**



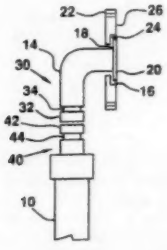
1. A conduit vibration decoupling device for use in exhaust systems of internal combustion engines, comprising a pair of axially spaced conduit connecting members interconnected with each other by a flexible connecting element, and a force transmitting means having at least axial elasticity for transferring forces between said conduit connecting members whilst by-passing the flexible connecting element, said force transmitting means comprising a housing surrounding said flexible connecting element,

said housing being connected near at least one axial end thereof to an adjacent conduit connecting member by an articulated spring assembly having at least a pair of spring means, each of said spring means comprising at least a single leaf spring element and having a pair of end portions spaced from each other, and wherein each of said spring means at an intermediate portion thereof between said end portions being mounted to the adjacent conduit connecting member substantially free from play at least in the circumferential direction of the decoupling device, and wherein the end portions of said spring means being supported by said housing at circumferentially spaced locations thereof in which one of said end portions being supported by said housing substantially free from play at least in the circumferential direction of the decoupling device.

US 6,331,020 B1
COUPLING FOR FLEX PIPE, RIGID PIPE AND FLEXIBLE HOSE

Alfred J. Brunella, Long Beach, Calif., assignor to Pacific Flo-Rite, Inc., City of Industry, Calif.

Provisional application No. 60/149,908, filed on Aug. 23, 1999. This application Aug. 18, 2000, Appl. No. 640,756.
Int. Cl. F16L *27/00*
U.S. Cl. 285—179 **19 Claims**



1. A flexible pipe coupling system comprising a tubular elbow having a turnback rolled and upset at one end for mounting within a recess within a bolt-on flange, and having at the second end an annular groove around an exterior wall portion, the annular groove being spaced inward from the distal end for connecting to a flexible pipe, further comprising a flexible hose coupling and having a flexible pipe with an enlarged end overlying the end of the elbow which has an exterior annular groove, the enlarged end of the coupling having a cylindrical recess for receiving the end of the elbow, and having an annular groove in the recess for aligning with the annular groove in the elbow exterior wall, a shoulder at the end of the interior recess for receiving the end of the elbow, an annular seal disposed between an interior wall of the recess and the end of the elbow within the recess, and a connector disposed in the annular grooves.

US 6,331,021 B1
FUEL SYSTEM VENT LINE

Johanne Wilson, Dearborn Heights; Laura Lou Cranmer, Novi; James Pickard, Troy, and Kevin Baxter, Goodrich, all of Mich., assignors to Ford Global Technolobies, Inc., Dearborn, Mich.

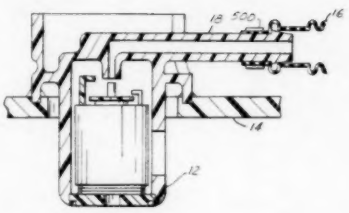
Filed Dec. 7, 1998, Appl. No. 207,072
Int. Cl. F16L *33/00*
U.S. Cl. 285—239 **7 Claims**

1. A fuel vapor system comprising:

a nipple having an outer surface with an outside diameter and a barb formed thereon projecting radially outwardly from the outer surface;

a hose having a first end with a cuff formed therein axially spaced from the first end of the hose, said cuff having an inside diameter that is substantially undeflected after installation over the barb, the cuff further comprising a wall for engagement with the barb and a radial clearance with a portion of the barb adjacent the engaging wall; and

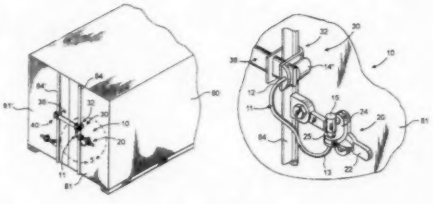
wherein the radial clearance remains in existence with the portion of the barb adjacent the engaging wall after installation thereto.



US 6,331,022 B1
CARGO SEAL

Jeff Liroff, 321 Sunset Dr., Apt 1, Ft. Lauderdale, Fla. 33301

Continuation of application No. 09/188,483, filed on Nov. 9, 1998, now Pat. No. 6,113,163, which is a continuation-in-part of application No. 08/801,843, filed on Feb. 18, 1997, now Pat. No. 5,857,721. This application Aug. 28, 2000, Appl. No. 649,739.
This patent is subject to a terminal disclaimer.
Int. Cl. B65D *27/30;* **E05B** *65/06*
U.S. Cl. 292—307 R **17 Claims**



1. To securely close a container having at least one door, an improved cargo seal comprising:

a lock assembly, said lock assembly being structured to secure the door in a closed orientation and including at least one lock aperture;

an elongate segment of substantially strong, generally flexible material, said elongate segment including opposite ends and structured to extend through said lock aperture of said lock assembly so as to restrict movement of said lock assembly and accordingly release of the door from said closed orientation;

at least one of said opposite ends of said elongate segment including a mating segment;

a lock segment structured to be correspondingly and substantially fixedly disposed at said opposite ends of said elongate segment so as to generally prevent removal thereof segment and thereby providing visible evidence of tampering;

said mating segment structured to be securely coupled with said lock segment,

said lock segment having an increased diameter relative to a diameter of said elongate segment, so as to prevent removal of said elongate segment from said lock aperture, and accordingly movement of said lock assembly to permit opening of the door, without removal of said lock segment or visibly damaging said lock assembly, thereby providing clear evidence of tampering and opening of said door,

said lock assembly including at least a cargo door latch assembly in which said lock aperture is defined, and a tamper evident container door lock,

said cargo door latch assembly including a lock rod disposed on the door of the container,

said tamper evident door lock including a retention bracket structured to be disposed about said lock rod, and a cross brace structured to be secured with said retention bracket;

said cross brace structured to generally retain said retention bracket engaged with said lock rod so as to prevent removal of said retention bracket from said lock rod; and

said elongate segment structured to extend through at least said cross brace.

US 6,331,023 B1

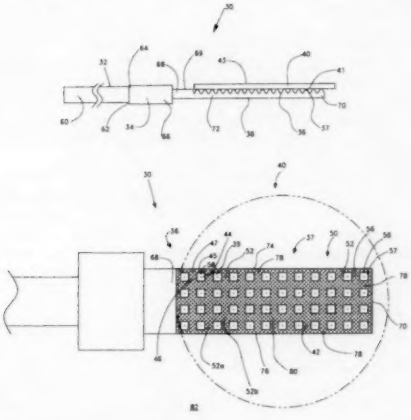
GRIDDED SUBSTRATE TRANSPORT SPATULA

Dennis Goodwin, Happy Jack, Ariz., and Gerben O. Vrijburg, Zandvoort, Netherlands, assignors to ASM America, Inc., Phoenix, Ariz.

Filed Jan. 14, 2000, Appl. No. 483,604

Int. Cl. B25J *15/00;* **B65G** *49/07*

U.S. Cl. 294—1.1 **17 Claims**



1. In a substrate processing system, a substrate transport assembly comprising:

a robotic arm having a rear end that mounts to a support member of a substrate processing system and a forward end that can be controllably displaced to move a substrate;

a spatula holder secured to said robotic arm; and

a spatula having a rear end connected to a forward end of said spatula holder so that the spatula can be controllably moved by the robotic arm, said spatula comprising an element having an upper surface with a plurality of intersecting channels and a plurality of uniformly distributed protrusions extending upwardly from the channels, said protrusions being arranged so that a substrate can be positioned on the spatula with the lower surface of the substrate uniformly supported by the protrusions and with the channels being open to outer edges of the element to allow gas to flow adjacent the lower surface of the substrate to facilitate separating the substrate from the spatula.

US 6,331,024 B1

LIFTING SLING SYSTEM WITH SPACED, BI-DIRECTIONAL LOOPS

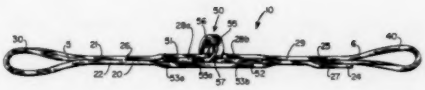
William F. Gulley, 200 Duff Rd. Ext., Monroe, La. 71203

Filed Nov. 18, 1997, Appl. No. 972,761

Int. Cl. B66C *1/12*

U.S. Cl. 294—74 **18 Claims**

1. A sling for lifting a heavy work piece, comprising:



a single strap made of flexible, in-elastic fabric material overlappingly converging upon itself to form a top strap member and a bottom strap member to form a two-ply strap member;

a first, integral, terminal, eye-loop end;

a second, integral, terminal end; and

at least one, intermediately spaced, bi-directional loop coupled to said two-ply strap member between said first eye-loop end and said second end, said at least one bi-directional loop being sandwiched between said top strap member and said bottom strap member.

US 6,331,025 B1

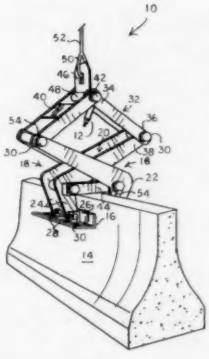
BARRIER LIFTER

William E. Douglas, R.D. No. 1, Box 151A, New Florence, Pa. 15944

Filed Jul. 12, 2000, Appl. No. 615,324

Int. Cl. B66C *1/44*

U.S. Cl. 294—110.1 **5 Claims**



1. A barrier lifter apparatus comprising;

a pair of right-angled jaw elements positioned horizontally to securely abut a concrete barrier with a vertical side thereof;

a pair of upright L-shaped tong members, wherein each tong member having a long leg, a juncture and a short leg having a distal end, said distal end connected to one of the right-angled jaw elements;

two pairs of straight link members, each having a proximate end and a distal end, pivotally connected at its distal end to a proximate end of each L-shaped tong member;

planar cross braces between each pair of link members;

each proximate end of a link member joined and connected by a pivot pin to a shackle;

three rods connecting the proximate and distal ends of each link member;

two rods connecting the juncture of each tong member; and

a pair of crossbars attached pivotally between each juncture of each tong member, wherein one of each crossbar is positioned outside one juncture and the opposite end is positioned inside the other juncture;

whereby the concrete road barrier can be hoisted by the apparatus.

US 6,331,026 B1

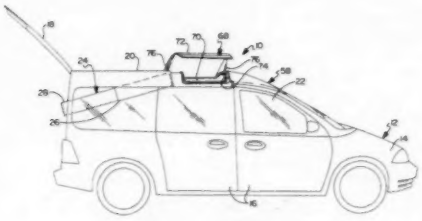
ROOF STORAGE COMPARTMENT ASSEMBLY FOR VEHICLES

Daniel Mark Adsit, Ann Arbor, and Michael D. Yaroch, Livonia, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Sep. 1, 2000, Appl. No. 653,655

Int. Cl. B60N *3/12*

U.S. Cl. 296—37.7 **18 Claims**



1. A roof storage compartment assembly for a vehicle having a roof comprising:

a plurality of storage compartments to be operatively connected to the roof; and

one of said storage compartments being a tray assembly to be disposed within the vehicle and including a tray holder for pivotal connection to die roof to be pivoted and accessible from within the vehicle and a tray disposed in said tray holder to be extended and retracted linearly relative to said tray holder.

US 6,331,027 B1

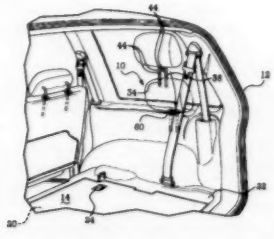
REMOVABLE VEHICLE SEAT HEADREST STORAGE IN A TRIM PANEL SOCKET

Jason Wiedmayer, Manchester, Mich., assignor to Ford Global Tech., Inc, Dearborn, Mich.

Filed Nov. 3, 2000, Appl. No. 681,004

Int. Cl. B60J *11/00;* **B60N** *2/48*

U.S. Cl. 296—37.8 **9 Claims**



1. A headrest storage structure for use with a vehicle of the type including an amount of interior trim and a headrest having a pair of attachment members, said structure comprising a pair of apertures which are disposed within said interior trim and which are effective to selectively receive said pair of attachment members, thereby allowing said headrest to be secured to said interior trim.

US 6,331,028 B1

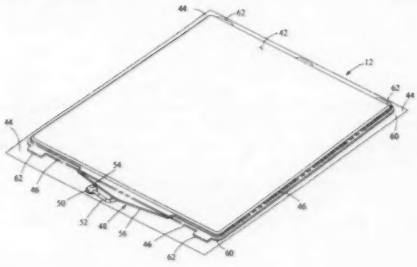
FIBER-REINFORCED COMPOSITE STRUCTURE

Michael A. O'Neill, Stonington; Wayne D. Kirk, Old Lyme; Stuart C. Simmons, North Branford; Paul Trudeau, Old Lyme, and Jonathan W. Bremmer, Portland, all of Conn., assignors to Advance USA, Inc., Old Lyme, Conn.

Filed Oct. 17, 2000, Appl. No. 690,338

Int. Cl. B60P *7/02*

U.S. Cl. 296—100 **4 Claims**



1. A tonneau for a motor vehicle, comprising:

two molded outer polymeric layers spaced apart from each other and defining a cavity therebetween, wherein each molded outer polymeric layer defines a sealing surface extending about a periphery of the respective layer, and the opposing sealing surfaces cooperate to define a hermetic seal extending about a periphery of the cavity;

at least two multi-directional fiber reinforcement layers, each multi-directional fiber reinforcement layer being mounted adjacent to a respective outer polymeric layer and defining a first region of the cavity extending between each respective outer polymeric layer and adjacent fiber reinforcement layer, and a second region of the cavity extending between the fiber reinforcement layers; and

a core located between the two outer polymeric layers and made of a core material capable of exhibiting a foamed character and a resinous character;

wherein the core material includes a resin and a blowing agent activatable upon exposure to a predetermined vacuum pressure within the cavity to convert the core material within the second region of the cavity from a resinous character to a foamed character; and

wherein the second region of the cavity is substantially filled with the core material exhibiting the foamed character, each multi-directional fiber reinforcement layer is impregnated with the core material exhibiting a relatively dense, resinous character, and each first region of the cavity is substantially filled with the core material exhibiting a resinous character and fixedly securing the multi-directional fiber reinforcement layers to the outer polymeric layers.

US 6,331,029 B1

DEVICE FOR DRIVING A FOLDING TOP FOR A CONVERTIBLE VEHICLE

Bernhard Schenk, Böblingen, Germany, assignor to Daimler-Chrysler AG, Stuttgart, Germany

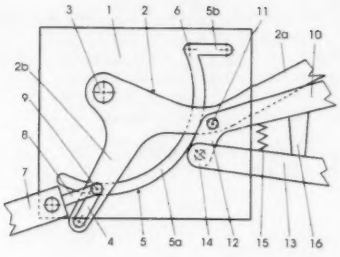
Filed Mar. 15, 2000, Appl. No. 525,912

Claims priority, application Germany, Mar. 16, 1999, 199 11 537

Int. Cl. B60J *7/08*

U.S. Cl. 296—122 **19 Claims**

1. Device for driving a folding top for a convertible, having at least one main bearing, which is at least indirectly connected to the vehicle body, at least one main pillar to which the folding top is attached and which is mounted in a rotatable manner on the at least one main bearing, at least one driving mechanism for driving the at least one main pillar, and a fabric-retaining bow for stretching the folding top when it is closed,



wherein the at least one main bearing has a connecting-link-type guide,

wherein the at least one main pillar is provided with a slot,

wherein the at least one driving mechanism has a bolt-like element which is configured to be accommodated in the connecting-link-type guide of the at least one main bearing and in the slot of the at least one main pillar,

wherein at least one additional lever is connected in an articulated manner via a first pivot to the fabric-retaining bow, and

wherein the at least one additional lever has a recess on its side facing away from the first pivot for the purpose of accommodating the bolt-like element.

US 6,331,030 B1

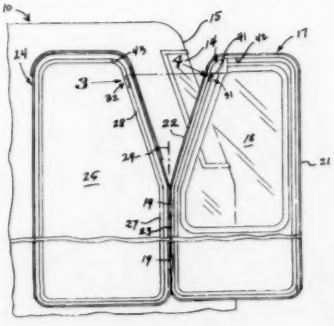
VEHICLE DOOR WITH ANTI-FLUTTER CATCH ASSEMBLY, AND METHOD OF PREVENTING VEHICLE DOOR FLUTTER

Charles Wayne Geiger, La Crescenta, Calif., assignor to Hehr International, Los Angeles, Calif.

Provisional application No. 60/148,910, filed on Aug. 13, 1999. This application Aug. 11, 2000, Appl. No. 637,802.

Int. Cl. B60J *5/10;* **E05B** *65/06;* **E05C** *19/02*

U.S. Cl. 296—146.9 **16 Claims**



1. In combination with an upright vehicle door having a predetermined shape including a front side edge comprising a substantially straight lower portion and a rearwardly sloped upper portion to be subject to fluttering forces during vehicle operation, a door frame defining an opening of said predetermined shape sized to receive said door with a close fit, and a hinge between said straight lower portion of said door and the adjacent portion of said frame supporting the door for swinging between open and closed positions, the improvement comprising:

a catch assembly disposed between said door and said door frame above said straight lower portion and having:

a catch spring member including a yieldable detent; and

a catch member having a ramp and a detent recess at the end of the ramp;

one of said members being mounted in a preselected position on said door to follow a predetermined path during closing of the door and the other being mounted on said door frame and positioned along said path to engage said one member as the door swings into the closed position, and being operable when engaged to hold said door against outward movement in response to said fluttering forces; and

said members having opposed surfaces on said detent and ramp at said detent recess providing a reverse ramp for camming said detent out of said recess in response to an opening force on said door that is greater than the fluttering forces that are to be exerted during vehicle operation.

US 6,331,031 B1

SOLAR MOTOR VEHICLE ROOF

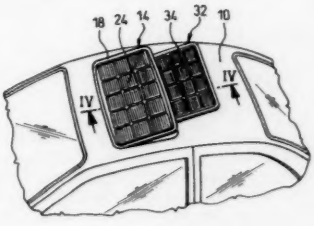
Werner Pätz, Hofstetten; Thomas Ganz, Stockdorf; Helmut Teschner, Finning, and Reinhard Wecker, Eichenau, all of Germany, assignors to Webasto Vehicle Systems International GmbH, Stockdorf, Germany

Filed Aug. 7, 2000, Appl. No. 634,716

Claims priority, application Germany, Aug. 6, 1999, 199 37 221

Int. Cl. B60J *7/043*

U.S. Cl. 296—211 **18 Claims**



1. Motor vehicle roof with a closure element for a roof opening which can be displaced between a closed position and an open position being provided with a primary solar generator, and an additional element having an additional solar generator, wherein the additional solar generator has a working position outside of the vehicle in which the additional solar generator is coupled to the closure element in the open position of the closure element to generate solar current.

US 6,331,032 B1

INFANT CARRIER MOUNTING SYSTEM

Robert E. Haut, Paoli; Michael L. Longenecker, Ephrata, and Robert T. Pike, Reading, all of Pa., assignors to Graco Children's Products Inc., Elverson, Pa.

Division of application No. 08/927,019, filed on Sep. 10, 1997, now Pat. No. 6,070,890. This application Feb. 22, 2000, Appl. No. 510,336.

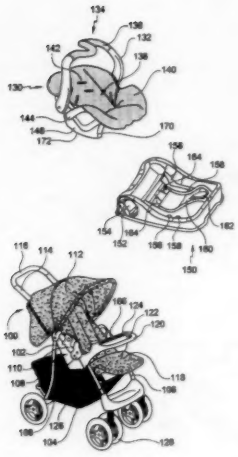
Int. Cl. A47C *13/00;* **A47D** *1/10*

U.S. Cl. 297—130 **18 Claims**

1. A combination stroller and an infant carrier juvenile product comprising:

a stroller including a frame, a seat, and a child restraining member connected to the frame to prevent a child from falling from the seat; and

an infant carrier having a frame, a connection mechanism, and an actuator carried by the infant carrier frame, the connection mechanism including first and second latches, the first latch being adapted to latch to the child restraining member and the second latch being adapted to latch to a structure other than the stroller, the first and second latches each being movable between a locked position to secure the infant carrier to the



child restraining member and an unlocked position to allow the infant carrier to be removed from the stroller,

wherein the actuator actuates both the first and second latches to the unlocked position.

US 6,331,033 B2

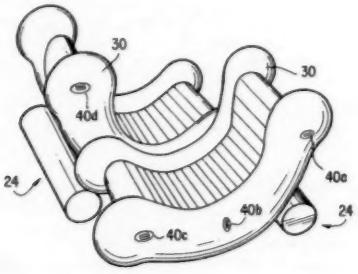
PORTABLE RECLINER ASSEMBLY

Kwok-Wing Lau, Hong Kong, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Pleasure Time Products (HK) Limited, The Hong Kong Special Administrative Region of the People's Republic of China

Filed Oct. 6, 1999, Appl. No. 413,583

Int. Cl. A47C *1/02*

U.S. Cl. 297—325 **17 Claims**



1. A recliner assembly, comprising:

a first recliner seat having first and second side walls, and first and second connectors provided on the first and second side walls, respectively, the first recliner seat further including a third connector;

a first inflatable support having a support connector that is coupled to the third connector;

a second recliner seat having third and fourth side walls, and fourth and fifth connectors provided on the third and fourth side walls, respectively, the second recliner seat further including a sixth connector; and

a second inflatable support having a support connector that is coupled to the sixth connector;

wherein the first recliner seat is connected in a side-by-side manner to the second recliner seat.

US 6,331,034 B1

APPARATUS FOR ADJUSTING THE INCLINATION OF A BACKREST OF A VEHICLE SEAT

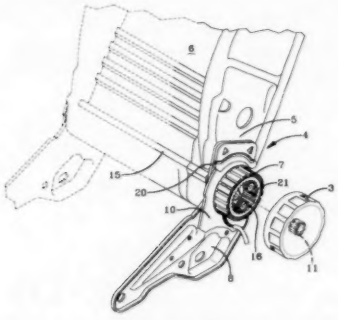
Martin Specht, Feldafing, Germany, assignor to Breed Automotive Technology, Inc., Lakeland, Fla.

Filed May 19, 2000, Appl. No. 574,323

Claims priority, application Germany, Dec. 22, 1999, 199 62 225

Int. Cl. B60N *2/02*

U.S. Cl. 297—362.11 **18 Claims**



1. An apparatus for adjusting the inclination of a back rest of a vehicle seat comprising an electric motor and a hand wheel as adjusting drives which act on an adjustable back rest frame via an adjusting gear, wherein the hand wheel is arranged coaxially to a rotor of the electric motor and accommodates components of the motor as a hood-shaped housing in its interior.

US 6,331,035 B1

CUTTING TOOL HOLDER ASSEMBLY WITH PRESS FIT

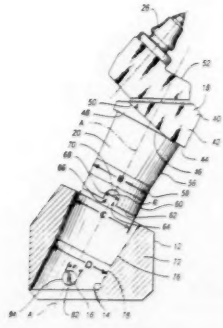
Robert H. Montgomery, Jr., Everett, Pa., assignor to Kennametal PC Inc., Monrovia, Calif.

Filed Mar. 19, 1999, Appl. No. 273,444

This patent is subject to a terminal disclaimer.

Int. Cl. E21C *35/19*

U.S. Cl. 299—106 **40 Claims**



1. An excavation cutting tool holder assembly comprising:

a cutting tool holder having a holder body portion and a holder shank, the holder shank having a shank press fit portion and a shank bottom end, the shank press fit portion having a shank press fit dimension and the shank bottom end having a tool holder locator; and

a support block having a block body, the block body having a block bore, the block bore having a block bore press fit portion and a block engagor, the block bore press fit portion having a block bore press fit dimension less than the shank press fit dimension such that the shank press fit portion press

fits with the block bore press fit portion while the block engagor engages the tool holder locator so as to orient the cutting tool holder relative to the support block

wherein the shank press fit portion is a shank cylindrical portion having a shank press fit diameter and the bore press fit portion is a bore cylindrical portion having a block bore press fit diameter less than the shank press fit diameter.

US 6,331,036 B1

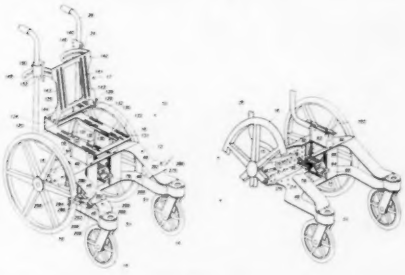
AXLE MOUNT FOR WHEELCHAIR

James B. Papac, 201 Skiff Trace, Peachtree City, Ga. 30269

Division of application No. 09/274,651, filed on Mar. 23, 1999, now Pat. No. 6,139,037, which is a division of application No. 08/685,412, filed on Jul. 23, 1996, now Pat. No. 5,884,928. This application Oct. 31, 2000, Appl. No. 702,928.

Int. Cl. B60B *37/00;* **F16D** *1/12*

U.S. Cl. 301—111 **2 Claims**



1. An axle mount for attaching a quick-release wheel rotatably mounted to an axle sleeve to a wheelchair, comprising:

a split-sided cylinder having a pair of spaced-apart flanges extending laterally from the edges of the split;

the flanges defining bores for receiving therethrough fasteners to clinch the split-sided cylinder together, whereby an axle sleeve received in the cylinder is rigidly secured therein; and

a mounting flange that extends outwardly of the split-sided cylinder and defines at least one bore therethrough for receiving a fastener for securing the axle mount to a wheelchair chassis.

US 6,331,037 B1

DRIVE ARRANGEMENT FOR A WRITING HEAD

Dietrich Roscher, Ilmenau; Norbert Gebert, Schwansee, and Udo Reinold, Geretsried, all of Germany, assignors to ABB Instrumentation Limited, Cambridgeshire, United Kingdom

Filed Jul. 27, 1999, Appl. No. 361,911

Claims priority, application Germany, Jul. 27, 1998, 198 33 782

Int. Cl. G01D *15/02;* **B41J** *2/27*

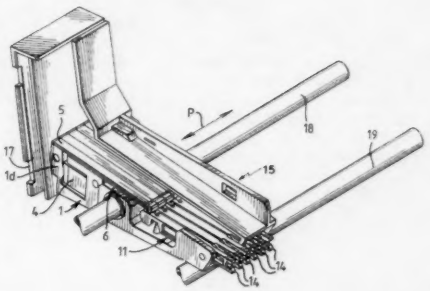
U.S. Cl. 346—141 **15 Claims**

1. Drive arrangement comprising:

a frame including first, second and third rigid sections which are rigidly connected together to form a stationery yoke, wherein said first and third sections form opposite sides of the yoke and are connected by said second section, said frame being open opposite said second section;

a movable limb resiliently hinged to said third section and extending freely across the open part of said frame opposite said second section, said movable limb extending from said third section to said first section;

a piezoelectric actuator compressively located between said movable limb and said second side sections, whereby said movable limb can be resiliently displaced when said piezoelectric actuator is energized by a pulsating signal, which causes said actuator to expand and contract, and wherein only



said movable limb applies the compressive force for locating said piezoelectric actuator;

a step-up transmission including first and second elongate, resiliently flexible elements each having first and second ends; said first ends of first and second elongate, resiliently flexible elements being fixed respectively to said first and third sections of said yoke; said second ends of said first and second elongate, resiliently flexible elements being connected together, said first and second flexible elements providing a differential sliding transmission for stepping up said resilient displacement of said first section, by said piezoelectric actuator, whereby displacement of said connected second ends of said first and second elongate, resiliently flexible elements is increased; and said first and second elements extending in parallel directions adjacent to the first section of the yoke.

US 6,331,038 B1

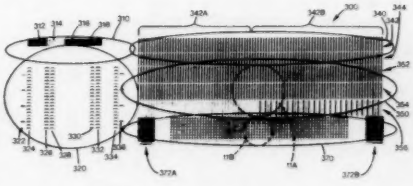
TECHNIQUES FOR ROBUST DOT PLACEMENT ERROR MEASUREMENT AND CORRECTION

Miquel Boleda, Barcelona, Spain; Jose J Doval, Escondido, Calif.; Albert Serra, and Xavier Gros, both of Barcelona, Spain, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 27, 2000, Appl. No. 492,553

Int. Cl. B41J *29/38;29/393*

U.S. Cl. 347—9 **22 Claims**



1. A method of sensing directional aberrations among ink-jet printhead nozzles on the same printhead, comprising:

mounting the printhead on a scanning carriage;

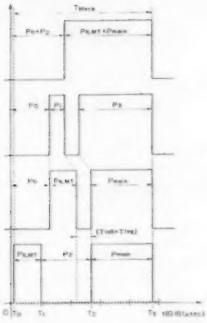
selecting one group of nozzles on said printhead and printing from said one group of nozzles a first repeating pattern of blocks on a print medium as the carriage is scanned along a scan axis;

advancing the print medium relative to the carriage along a media axis by an incremental distance relative to a swath height;

printing from said one group of nozzles a second repeating pattern on the print medium as the carriage is scanned along the scan axis, the second pattern including second pattern blocks interleaved between the first pattern blocks;

optically sensing the relative positions of the first and second patterns to record measurements for determining at least one directional deviation characteristic of the printhead.

US 6,331,039 B1
INK JET RECORDING APPARATUS AND METHOD WITH MODULATABLE DRIVING PULSE WIDTH
Osamu Iwasaki, Kawasaki; Naoji Otsuka; Kentaro Yano, both of Yokohama; Kiichiro Takahashi, Kawasaki, and Daigoro Kanematsu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 31, 1995, Appl. No. 509,667
Claims priority, application Japan, Jul. 29, 1994, 6-179136
Int. Cl. B41J *29/38*
U.S. Cl. 347—11 **32 Claims**



1. An ink jet recording apparatus in which thermal energy is applied to ink in accordance with driving signals applied to a heater of a recording head to produce a bubble, by which the ink is ejected onto a recording material, said apparatus comprising:

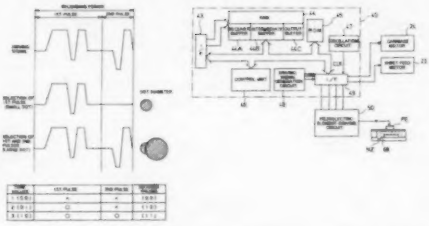
driving means for applying a plurality of the driving signals to the heater for ejection of one ink droplet, wherein the driving signals comprise a first driving signal not ejecting the ink and a second driving signal for ejecting the ink, the second driving signal being applied after a rest period after the first driving signal, each of the first and second driving signals and the rest period having a length; and

pulse width modulating means operable in first and second changing regions for controlling an ejection amount of ink by changing at least one of the length of the rest period and the length of the first driving signal applied by said driving means,

wherein said modulating means effects its changing operation in the first changing region in which the length of the rest period is changed without changing the length of the first driving signal and in the second changing region in which the length of the first driving signal is changed without changing the length of the rest period, and wherein control of the ejection amount in the first changing region is such that the ejection amount is larger than the ejection amount in the second changing region.

US 6,331,040 B1
METHOD OF DRIVING INK JET RECORDING HEAD
Shuji Yonekubo, and Yasuhiko Kosugi, both of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
PCT No. PCT/JP98/01737, § 371 Date Dec. 16, 1998, § 102(e) Date Dec. 16, 1998, PCT Pub. No. WO98/46432, PCT Pub. Date Oct. 22, 1998
PCT Filed Apr. 16, 1998, Appl. No. 147,395
Claims priority, application Japan, Apr. 16, 1997, 9-099486; May 7, 1997, 9-117332
Int. Cl. B41J *2/205;29/393*
U.S. Cl. 347—15 **14 Claims**

1. An apparatus for driving an ink jet record head, wherein a pressure generating element and an opening is provided for each of a plurality of nozzles and said pressure generating element is actuated to cause an ink droplet to spout from the opening, said apparatus comprising:



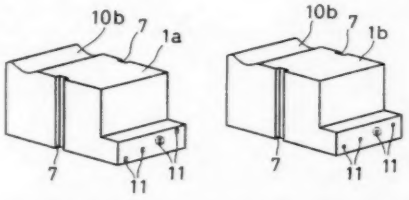
a driving signal generation unit that generates a driving signal, which includes a first driving pulse for causing a first ink droplet to spout from said nozzle and a second driving pulse for causing a second ink droplet to spout from said nozzle that is greater in size than the first ink droplet;

a driving pulse selection unit that selects at least one driving pulse from the first driving pulse and the second driving pulse in one recording period corresponding to the recording of one pixel;

an element driving unit that drives said pressure generating element in response to the selected at least one driving pulse; and

a dot creation unit configured to select both the first driving pulse and the second driving pulse in one recording period corresponding to the recording of one pixel so as to create a larger dot than dots formed by the first and second ink droplets.

US 6,331,041 B1
INKJET PRINTING APPARATUS
Hisashi Yoshimura, Nara, and Norihiro Ochi, Sakurai, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 19, 1999, Appl. No. 253,008
Claims priority, application Japan, Feb. 20, 1998, 10-038806
Int. Cl. B41J *29/393*
U.S. Cl. 347—19 **8 Claims**



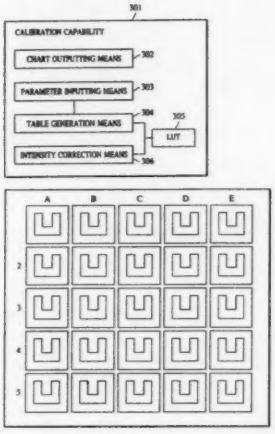
1. An inkjet printing apparatus provided with a carriage to which interchangeable ink heads can be attached, comprising:

means for detecting a type of an ink head attached to the carriage; and

a printing control circuit for executing a printing operation according to the type of the ink head attached to the carriage on the basis of a result of detection by the detecting means.

US 6,331,042 B1
SYSTEM FOR CALIBRATING IMAGE PROCESSING CHARACTERISTICS OF A PRINTER
Shigeki Yamada, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 25, 2000, Appl. No. 577,977
Claims priority, application Japan, May 28, 1999, 11-149593; Jul. 14, 1999, 11-200068
Int. Cl. B41J *29/393*
U.S. Cl. 347—19 **16 Claims**

1. An image processing method comprising the steps of:



outputting, using an image forming unit, a chart including a plurality of patches used to determine a correction parameter;

inputting a command issued by a user to specify a particular patch in said chart; and producing said correction parameter in accordance with said command issued by the user,

said image processing method being characterized in that each of said plurality of patches includes an image reproduced using process black and an image reproduced using a black recording agent.

US 6,331,043 B1

LIQUID DISCHARGING METHOD, A LIQUID DISCHARGE HEAD, AND A LIQUID DISCHARGER APPARATUS

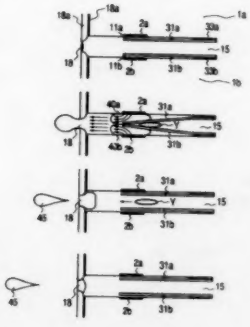
Satoshi Shimazu, Yokohama; Hiroshi Sugitani, Machida; Kazuaki Masuda, Kawasaki; Masami Ikeda, Seki-machi; Hiroyuki Ishinaga, Tokyo; Toshio Kashino, Chigasaki; Masahiko Kubota, Tokyo; Aya Yoshihira, Yokohama, and Kiyomitsu Kudo, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1998, Appl. No. 89,427

Claims priority, application Japan, Jun. 6, 1997, 9-149379; Jun. 6, 1997, 9-149382

Int. Cl. B41J *2/14;2/05*

U.S. Cl. 347—48 **33 Claims**



1. A liquid discharging method for discharging liquid using pressure exerted by creation of a bubble in a bubble generating area for creating such bubble in said liquid, comprising:

displacing a movable member provided with its free end on a discharge opening side with respect to its movable fulcrum point, wherein said bubble generating area and said movable member are arranged to be in two sets to face each other at least partly, and

allowing said two movable members to come closer to each other for discharging said liquid through the discharge opening.

US 6,331,044 B2

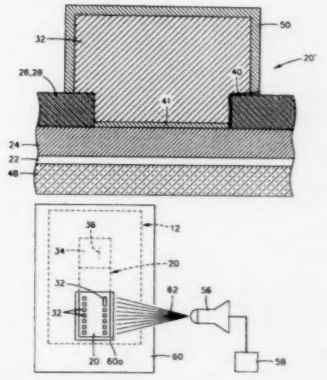
CORROSION RESISTANT THERMAL INK JET PRINT CARTRIDGE AND METHOD OF MANUFACTURING SAME

Roger R. Sleger, and Russell R. Grobe, both of Eagle, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 27, 1999, Appl. No. 428,145

Int. Cl. B41J *2/14*

U.S. Cl. 347—50 **15 Claims**



12. A corrosion resistant thermal ink jet print cartridge, comprising:

a housing;

a thin film structure mounted to the housing and including a plurality of electrical contact pads;

a nozzle plate attached to the thin film structure, the nozzle plate having a plurality of individual nozzle orifices; and

a blend of corrosion inhibitors hermetically sealing any minute crevices that have developed around a perimeter of the electrical contact pads, the blend of corrosion inhibitors including an amine salt of fatty acids and triazole;

whereby moisture is prevented from entering the minute crevices and causing corrosion that would otherwise lead to operational failures of the print cartridge.

US 6,331,045 B1

DROP ON DEMAND INK JET PRINTING APPARATUS

Robert A. Harvey, and Stephen Temple, both of Cambridge, United Kingdom, assignors to Xaar Technology Limited, Cambridge, United Kingdom

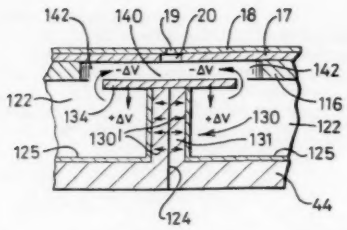
Continuation of application No. PCT/GB99/03173, filed on Sep. 23, 1999. This application Mar. 13, 2001, Appl. No. 804,849.

Claims priority, application United Kingdom, Sep. 23, 1998, 9820755

Int. Cl. B41J *2/04*

U.S. Cl. 347—54 **49 Claims**

1. Drop-on-demand ink jet printing apparatus comprising a nozzle on a nozzle axis; an ink chamber communicating with the nozzle; a piezoelectric actuating structure, said structure extending



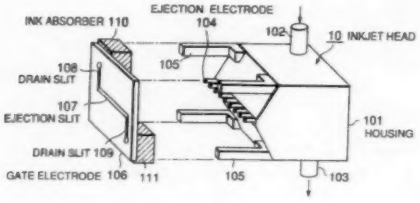
around the nozzle axis and extending in the direction of the nozzle axis; an actuating surface bounding the chamber and facing towards the nozzle, said structure being actuable to move said actuating surface in the direction of the nozzle axis to effect droplet ejection through the nozzle; and electrodes for applying an actuating electric field to the actuating structure.

US 6,331,046 B1

ELECTROSTATIC INKJET HEAD HAVING AN INK DRAIN FOR DRAINING INK FROM A SLIT

Toru Yakushiji; Tadashi Mizoguchi; Junichi Suetsucu; Hitoshi Minemoto; Hitoshi Takemoto; Kazuo Shima, and Yoshihiro Hagiwara, all of Niigata, Japan, assignors to NEC Corporation, Japan

Filed Sep. 3, 1998, Appl. No. 146,469
Claims priority, application Japan, Sep. 4, 1997, 9-239795
Int. Cl. B41J *2/06*
U.S. Cl. 347—55 **16 Claims**



1. An inkjet head comprising:

a plurality of ejection electrodes arranged in an ink chamber containing ink including particulate matter for ejecting ink in a predetermined direction;

a front end plate placed at a predetermined distance in the predetermined direction from the ejection electrodes, the front end plate having a slit formed such that the ejection electrodes are directed to the slit;

the slit having a first and second end;

at least one ink drain coupled to the slit, for draining ink from the slit; and

the at least one ink drain comprising at least one drain slit formed in the front end plate.

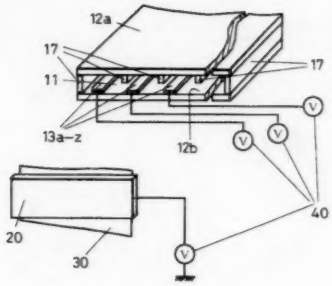
US 6,331,047 B1

INK RECORDING HEAD AND INK INJECTING METHOD USING INK RECORDING HEAD

Hiroyuki Muramatsu; Seiji Kuwahara; Atsuya Akase; Kouji Kawaguchi, and Tatsuru Sato, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Jun. 4, 1999, Appl. No. 326,151
Claims priority, application Japan, Jun. 5, 1998, 10-157715; Mar. 1, 1999, 11-052826
Int. Cl. B41J *2/06*
U.S. Cl. 347—55 **38 Claims**

1. An ink recording head comprising: means defining an opening portion; a liquid chamber for containing ink and communicating



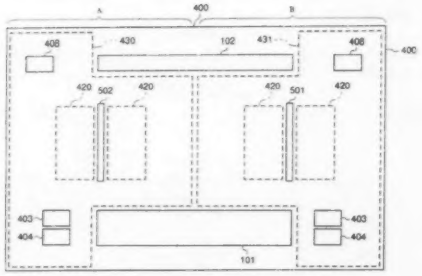
with the opening portion; a plurality of record electrodes arranged proximate the opening portion; an opposed electrode arranged opposite to and spaced apart from the opening portion at a predetermined interval; and voltage application means for applying voltages to the plurality of record electrodes and the opposed electrode by setting a potential difference between a selected one of the record electrodes and the opposed electrode smaller than a potential difference between a nonselected one of the record electrodes and the opposed electrode so that an electrostatic force is exerted to the ink to thereby inject the ink from the opening portion at a position of the selected record electrode.

US 6,331,048 B1

INKJET PRINTHEAD HAVING MULTIPLE INK SUPPLY HOLES

Masahiro Takizawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1999, Appl. No. 376,281
Claims priority, application Japan, Aug. 19, 1998, 10-233214
Int. Cl. B41J *2/05*
U.S. Cl. 347—57 **14 Claims**



1. An inkjet printhead for discharging ink and implementing a recording, comprising a substrate as an element, said substrate having:

a plurality of ink supply holes for passing discharge ink;

a plurality of heaters arranged in a vicinity of said ink supply holes for discharging ink that is supplied from said ink supply holes by heating;

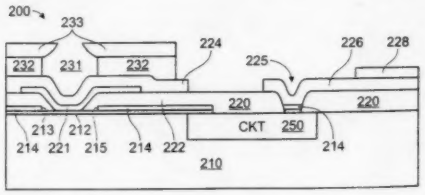
a first signal processing circuit laid out at least at one corner of said substrate to select and drive said heaters; and

a second signal processing circuit other than said first signal processing circuit to select and drive said heaters.

US 6,331,049 B1
PRINTHEAD HAVING VARIED THICKNESS PASSIVATION LAYER AND METHOD OF MAKING SAME

Marzio Leban, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 12, 1999, Appl. No. 267,216
Int. Cl. B41J *2/05*
U.S. Cl. 347—64 **15 Claims**

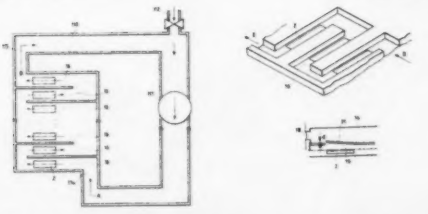


1. A printhead apparatus, comprising:
a substrate;
a fluid expulsion element formed on said substrate;
a first passivation layer formed over at least a portion of said substrate;
a second passivation layer formed over a part, less than whole, of said first passivation layer; and
a fluid well formed over said fluid expulsion element;
wherein a thickness of said second passivation layer is less than a thickness of said first passivation layer; and
wherein said second passivation layer is formed proximate said fluid expulsion element and in contact therewith.

US 6,331,050 B1
LIQUID EJECTING HEAD AND METHOD IN WHICH A MOVABLE MEMBER IS PROVIDED BETWEEN FLOW PATHS, ONE PATH JOINING A COMMON CHAMBER AND EJECTION ORIFICE, THE OTHER, HAVING A HEAT GENERATING ELEMENT

Yoshie Nakata, Kawasaki; Hiroshi Sugitani, Machida; Tadayoshi Inamoto, Hachioji; Makiko Kimura, Sagamihara, and Shuji Koyama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1996, Appl. No. 632,667
Claims priority, application Japan, Apr. 14, 1995, 7-089058; Jun. 8, 1995, 7-142214; Jun. 22, 1995, 7-156536; Apr. 11, 1996, 8-089826
Int. Cl. B41J *2/05;2/18;2/19*
U.S. Cl. 347—65 **118 Claims**

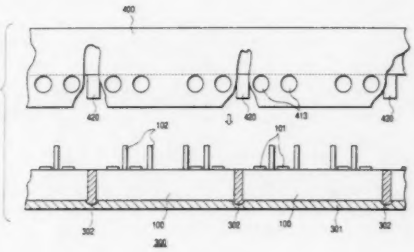


1. A liquid ejecting head for ejecting a liquid by generation of a bubble, comprising:
a first liquid flow path for direct fluid communication with an ejection outlet and a liquid chamber provided at an upstream region upstream the said ejection outlet so that the liquid is received in said first liquid flow path from the upstream region;
a second liquid flow path having a heat generating element for applying heat to the liquid to generate a bubble in the liquid for ejecting the liquid through the ejection outlet, and a liquid retaining region upstream of said heat generating element;
a movable member disposed between said first and said second liquid flow paths and facing said heat generating element, displaced to a side of said first liquid flow path based on a pressure generated when said heat generating element is driven, and having a fulcrum and a free end that is provided downstream from said fulcrum; and
a supply and guide path for removing the liquid in said liquid retaining region in said second liquid flow path separated from said first liquid flow path and supplying new liquid from said supply path upon removal of the liquid.

US 6,331,051 B1
INK JET RECORDING HEAD AND A METHOD OF MANUFACTURE THEREFOR

Hiroki Tajima; Yutaka Koizumi, both of Yokohama; Kiyomi Aono, Kawasaki; Tsutomu Abe, Isehara; Seiichiro Karita, Yokohama; Takeshi Okazaki, Sagamihara; Kouichi Omata, Kawasaki, and Masahiko Kubota, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1998, Appl. No. 188,107
Claims priority, application Japan, Nov. 11, 1997, 9-325220
Int. Cl. B41J *2/05*
U.S. Cl. 347—65 **11 Claims**



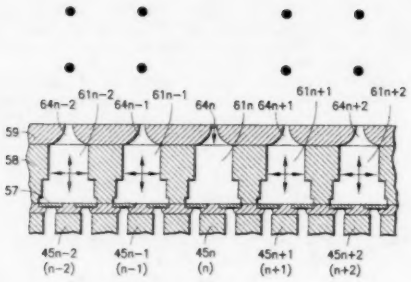
1. An ink jet recording head, comprising:
a plurality of discharge ports for discharging ink;
a plurality of ink flow paths in communication with said plurality of discharge ports;
a plurality of substrates that includes a discharge energy generating element for providing discharge energy for discharging ink;
a supporting member for supporting the plurality of arranged substrates; and
a ceiling plate member for forming plurality of ink flow paths by being pressure bonded to the said plurality of arranged substrates using a pressure member, wherein
said plurality of substrates are each provided with a member that forms a side wall of an ink flow path, and
said ceiling plate member forms an ink flow path side wall at a region corresponding to a gap between the plurality of arranged substrates.

US 6,331,052 B1
INK JET PRINTING APPARATUS

Taeko Murai; Shuzo Matsumoto; Mitsumi Fujii, all of Yokohama; Tomoaki Nakano, Kawasaki; Hideyuki Makita, Yokohama; Yoshihisa Ohta, Hachioji; Shinichi Kakuda, Yokohama, and Tetsuro Hirota, Hadano, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 22, 1998, Appl. No. 158,660
Claims priority, application Japan, Sep. 22, 1997, 9-256278; Sep. 25, 1997, 9-260075; Jul. 13, 1998, 10-196913
Int. Cl. B41J *29/38;2/16;2/045*
U.S. Cl. 347—68 **51 Claims**

1. An ink jet printing apparatus including an ink jet head, wherein said ink jet head comprises:
a plurality of nozzles for ejecting ink drops;



a plurality of ink chambers, each having an internal volume, wherein each nozzle is in fluid communication with the internal volume of at least one ink chamber;

a plurality of electromechanical conversion elements, wherein each electromechanical conversion element is in functional association with an ink chamber and nozzle; and

a head driving circuit, configured and adapted to simultaneously provide an ejection driving waveform and a non-ejection driving waveform to said electromechanical elements, wherein the ejection driving waveform is applied to those electromechanical conversion elements associated with nozzles from which ejection of an ink drop is required to form an image in a print operation, and the non-ejection driving waveform is applied to those electromechanical conversion elements associated with nozzles from which ejection of an ink drop from the associated nozzle is not required to form an image in the print operation,

wherein the internal volume of each ink chamber is changed by driving said associated electromechanical conversion element when either an ejection driving waveform or a non-ejection driving waveform is applied to said associated electromechanical conversion element, such that,

when, in accordance with image data, ejection of an ink drop from a nozzle is required to form an image in a print operation, an ejection driving waveform is applied to said electromechanical conversion element associated with the nozzle, compressing said ink chamber an amount sufficient to eject an ink drop, and when, in accordance with image data, ejection of an ink drop from a nozzle is not required to form an image in a print operation, a non-ejection driving waveform is applied to said electromechanical conversion element associated with the nozzle, compressing said ink chamber an amount less than that required to eject an ink drop, but sufficient to prevent air from entering said ink chamber through said nozzle.

US 6,331,053 B1

METHOD AND APPARATUS FOR PRESSURIZING INK IN AN INKJET PRINTER INK SUPPLY USING SPRING FORCE

S. Dana Seccombe, Foster City, Calif., and Charles R. Steinmetz, Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

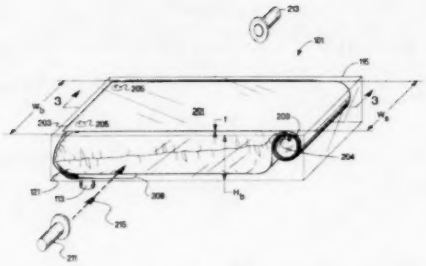
Filed Jan. 29, 1999, Appl. No. 240,092
Int. Cl. B41J *2/175*; **B65D** *35/32*
U.S. Cl. 347—85 **12 Claims**

1. An ink supply for providing ink to an inkjet printing system, the ink supply comprising:

a flexible fluid reservoir for containing a quantity of fluid;

a spring having an expanded position, and a contracted position; and

a housing including an interior surface and an aperture, the flexible fluid reservoir and aperture being layered and disposed interior of the housing;



wherein the spring is configured to operatively engage the flexible fluid reservoir as the spring transitions from the expanded position to the contracted position;

wherein the flexible fluid reservoir is biased by the spring as the spring contracts to produce fluid at a substantially constant fluid pressure at a fluid outlet; and

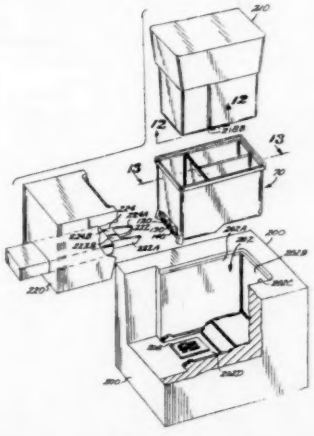
wherein the housing is cylindrical shaped having a container top and a container bottom wherein the flexible ink reservoir and the spring roll together in a helical path originating from the container bottom toward the container top.

US 6,331,054 B1

UNITARY ONE-PIECE BODY STRUCTURE FOR INK-JET CARTRIDGE

Preston Seu, Vancouver, Wash.; Patrick Boyd, and Gary Powell, both of Albany, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of application No. 09/516,922, filed on Mar. 2, 2000, now Pat. No. 6,260,961. This application Sep. 19, 2000, Appl. No. 664,625.
Int. Cl. B41J *2/175*
U.S. Cl. 347—87 **9 Claims**



1. A method for fabricating a multi-compartment ink-jet cartridge body structure, comprising:

positioning a core mold defining internal wall features of the body structure in a cavity mold defining external features of the body structure including a nosepiece portion having a printhead mounting region, said internal wall features including a plurality of internal walls within the body structure defining a plurality of ink compartments;

positioning a mold slide having first and second slide features in molding relationship with the cavity mold and the core mold such that the first and second slide features are disposed

within a nosepiece-defining portion of the cavity mold, the first and second slide features for defining first and second ink paths leading to respective first and second ink compartments comprising the plurality of ink compartments;

injecting molten plastic into cavities defined by the core mold, the cavity mold and the mold slide;

allowing the molten plastic to solidify into a unitary body structure including pairs of opposed side walls and said nosepiece portion;

removing the mold slide with the first and second slide features from the body structure, leaving a slide access opening defined in an external surface of the body structure, said slide access opening communicating with portions of the first and second ink paths;

attaching a cover to cover the slide access opening.

US 6,331,055 B1

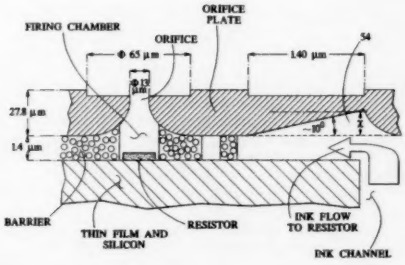
INKJET PRINTHEAD WITH TOP PLATE BUBBLE MANAGEMENT

Michael D. Miller, Shedd, and Garrard Hume, Corvallis, both of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 30, 1999, Appl. No. 386,032

Int. Cl. B41J *2/19*

U.S. Cl. 347—92 **29 Claims**



22. An inkjet printer comprising:

an inkjet printhead comprising:

a substrate defining an ink aperture through which ink flows from a reservoir, said substrate further having at least first and second major surfaces, said at least first major surface substantially surrounding said ink aperture and said second major surface substantially surrounding said first major surface and further being elevated with respect to said first major surface;

a plurality of ink energizing elements substantially on the second major surface of the substrate:

a barrier layer connected to the second major surface thereby forming wall portions of said barrier layer, said barrier layer peripherally defining an ink manifold, and encompassing the ink aperture;

an orifice plate connected to the barrier layer, spaced apart from the substrate second major surface, enclosing the ink manifold, and defining a plurality of orifice apertures, each associated with a respective ink energizing element, wherein the orifice plate comprises:

a planar plate defining a plurality of orifice apertures;

the planar plate defining at least one sloped groove:

wherein the at least one sloped groove extends from an ink feed slot region of the inkjet printhead to a bubble collection area adjacent to an end firing chamber located beyond the ink feed slot region;

the ink manifold being an elongated chamber having opposed ends and opposed sides defined by end wall portions of the barrier layer;

a printhead carriage; and

a printhead position controller.

US 6,331,056 B1

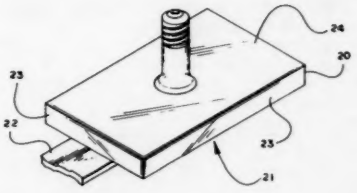
PRINTING APPARATUS AND APPLICATIONS THEREFOR

Ronald S. Nohr, Alpharetta, and John G. MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Provisional application No. 60/121,560, filed on Feb. 25, 1999. This application Feb. 24, 2000, Appl. No. 512,506.

Int. Cl. B41J *2/01*

U.S. Cl. 347—102 **21 Claims**



1. A printing apparatus comprising:

means for applying a photocurable ink composition onto a substrate; and;

means for drying/curing the photocurable ink composition; wherein said means for drying/curing the photocurable ink composition comprises a flat excimer lamp.

US 6,331,057 B1

MAGNETIC AUXILIARY EYEWEAR CLIP-ON LENSES

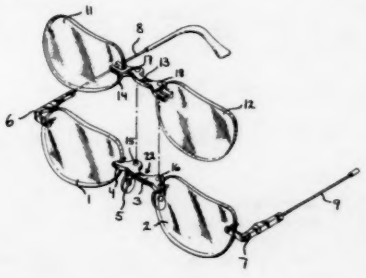
Karl Strube, Wassergasse 11, A-2500 Baden, Austria

Filed Dec. 26, 2000, Appl. No. 748,811

Claims priority, application Austria, Sep. 15, 2000, 1565-2000

Int. Cl. G02C *9/00*

U.S. Cl. 351—47 **14 Claims**



1. In combination with a pair of eyeglasses having a bridge assembly, a magnetic clip-on attachment, comprising:

first and second lenses;

a clip-on bridge connecting and rigidly holding said first and second lenses in a spaced-apart relationship substantially without a frame, said clip-on bridge being formed with two U-shaped lateral brackets each for receiving a respective one of said first and second lenses; and

a magnet disposed to magnetically attach said clip-on bridge to the bridge assembly of the pair of eyeglasses.

US 6,331,058 B1

PLASTIC LENS COMPOSITION AND METHOD FOR THE PRODUCTION THEREOF

N. Thornton Lipscomb, and Omar M. Buazza, both of Louisville, Ky., assignors to Ophthalmic Research Group International, Inc., Louisville, Ky.

Continuation of application No. 07/425,371, filed on Oct. 26, 1989, now Pat. No. 6,201,037, which is a continuation-in-part of application No. 07/273,428, filed on Nov. 18, 1988, now Pat. No. 4,879,318, which is a continuation-in-part of application No. 07/021,913, filed on Mar. 4, 1987, now abandoned, which is a continuation-in-part of application No. 06/823,339, filed on Jan. 28, 1986, now Pat. No. 4,728,469. This application Mar. 10, 2000, Appl. No. 523,423.

This patent is subject to a terminal disclaimer.

Int. Cl. G02C *7/02;7/04;* **C08F** *2/50*

U.S. Cl. 351—159 **61 Claims**

1. A plastic eyeglass lens made from the reaction product produced by subjecting a composition to curing conditions, the composition comprising:

a photoinitiator;

an aromatic containing bis(allyl carbonate)-functional monomer; and

at least about 25% by weight of one polyethylenic-functional monomer containing at least two ethylenically unsaturated groups selected from acrylyl and methacrylyl;

wherein the curing conditions comprise treating the composition with ultraviolet light for a time period of less than one hour, and wherein the reaction product is substantially clear.

US 6,331,059 B1

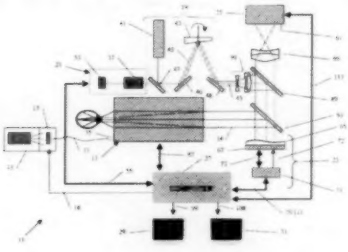
HIGH RESOLUTION, MULTISPECTRAL, WIDE FIELD OF VIEW RETINAL IMAGER

Alexis Kudryashov; Andrey Viktorovich Larichev, both of Moscow, Russian Federation, and Leonard John Otten, III, Placitas, N. Mex., assignors to Kestrel Corporation, Albuquerque, N. Mex.

Filed Jan. 22, 2001, Appl. No. 767,256

Int. Cl. A61B *3/10*

U.S. Cl. 351—221 **32 Claims**



1. An ophthalmic instrument comprising:

(a) a retinal imager, said imager including optics for illuminating and imaging the retina of the eye;

(b) means for generating a reference beam, said generating means being optically coupled to said imager optics to form a reference spot on said retina;

(c) a wavefront sensor optically coupled to said imager optics for measuring the wavefront produced by optical aberrations within said eye and said imager optics;

(d) first wavefront compensation means optically coupled to said imager optics for correcting large, low order aberrations in said wavefront;

(e) a high resolution detector optically coupled to said imager optics and said first wavefront compensation means; and

(f) computer means, said computer means connected to

(i) said wavefront sensor,

(ii) said first wavefront compensation means, and

(iii) said high resolution camera,

said computer means including second wavefront compensation means for correcting, small, high order aberrations.

US 6,331,060 B1

PROJECTION-TYPE DISPLAY DEVICE AND METHOD OF ADJUSTMENT THEREOF

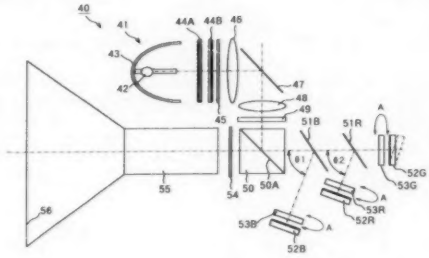
Hideki Yamamoto, Saitama, and Tetsuyuki Miyawaki, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 6, 1999, Appl. No. 413,455

Claims priority, application Japan, Oct. 8, 1998, 10-286166; Oct. 8, 1998, 10-286209

Int. Cl. G03B *21/14*

U.S. Cl. 353—31 **27 Claims**



12. A projection-type display device, comprising at least:

a plurality of reflection-type image forming means for spatially modulating and reflecting incident light and emitting optical images rotated in plane polarization with respect to a plane polarization of the incident light;

a light source for emitting illumination light;

color separating and synthesizing means for breaking down the illumination light by wavelengths corresponding to the reflection-type imaging forming means and outputting the results to the reflection-type image forming means and for synthesizing optical images obtained from the reflection-type image forming means and emitting the synthesized optical image:

a projection optical system for projecting the synthesized optical image to a predetermined projection object; and

a polarization beam splitter for emitting a predetermined plane polarization component from the illumination light emitted from the light source to the color separating and synthesizing means and emitting the synthesized optical image obtained from the color separating and synthesizing means to the projection optical system;

phase difference plates being arranged facing the light incidence/emission planes of the reflection-type image forming means; and comprising

holding mechanisms for holding the phase difference plates rotatably in planes substantially orthogonal to the optical axes.

US 6,331,061 B1

IRRADIANCE REDISTRIBUTION GUIDE

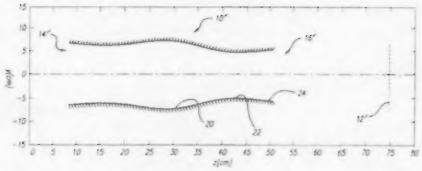
Narkis E. I. Shatz, La Jolla, and John C. Bortz, San Pedro, both of Calif., assignors to Science Applications International Corporation, San Diego, Calif.

Division of application No. 08/674,586, filed on Jul. 2, 1996, now Pat. No. 6,097,556. This application Mar. 9, 1999, Appl. No. 264,998.

Int. Cl. G02B *5/08*

U.S. Cl. 359—857 **10 Claims**

1. Apparatus for redistributing onto a predetermined target area, incident electromagnetic radiation from a radiation source that provides a predetermined irradiance distribution, comprising:



an entrance aperture configured to receive the incident radiation from the radiation source;

an exit aperture configured to transmit radiation toward the target area; and

a reflective inner surface disposed between the entrance aperture and exit aperture and configured to increase the uniformity of the irradiance distribution in the target area, wherein said exit aperture has a flared surface.

US 6,331,062 B1

LED FLASHLIGHT

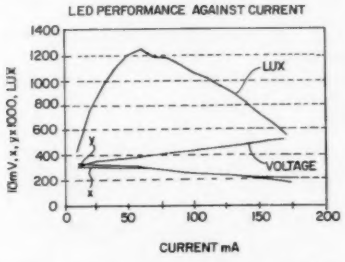
Iain Sinclair, P.O. Box 807, Hildersham, Cambridge CB1 6BX, United Kingdom

Filed Apr. 12, 1999, Appl. No. 290,556

Claims priority, application United Kingdom, Apr. 8, 1998, 9807768; Aug. 13, 1998, 2076806

Int. Cl. F21L *4/00;4/02*

U.S. Cl. 362—200 **4 Claims**



1. An improved portable electric light including an LED with a high internal resistance, said improvement comprising overrunning the LED to achieve a maximum lux.

US 6,331,063 B1

LED LUMINAIRE WITH LIGHT CONTROL MEANS

Kazuo Kamada, Hirakata; Shoichi Koyama, Kishiwada; Nobuyuki Asahi, Hirakata; Toshiyuki Suzuki, Nara; Eiji Shiohama, Katano; Masaru Sugimoto, Osaka; Shohei Yamamoto, Toyonaka; Jiro Hashizume, Hirakata; Taishi Akiniwa, Takatsuki, and Takashi Tanaka, Osaka, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Nov. 25, 1998, Appl. No. 199,893

Claims priority, application Japan, Nov. 25, 1997, 9-322626; Nov. 25, 1997, 9-323550; Nov. 25, 1997, 9-323551

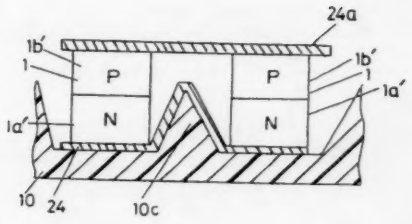
Int. Cl. F21V *7/04*

U.S. Cl. 362—237 **13 Claims**

1. An LED luminaire comprising:

a resin molded substrate provided at least on one surface thereof with light distribution control means for controlling the distribution of light in a desired direction and with a wiring circuit in a desired pattern, and

a plurality of LED chips mounted at least on the one surface of the substrate respectively and connected to the wiring circuit and in correspondence to the light distribution control means and wiring circuit,



wherein the light distribution control means comprises at least one uneven surface of the substrate and wherein the LED chips are mounted on the uneven surface with each LED chip having a p-n junction plane disposed substantially in conformity to the desired direction of the light distribution, the uneven surface of the substrate including a plurality of holes penetrating through the substrate from the one surface to the other, and the LED chips are mounted respectively in each of the through holes with the p-n junction planes disposed in conformity to penetrating direction of the holes.

US 6,331,064 B1

LIQUID CRYSTAL DISPLAY

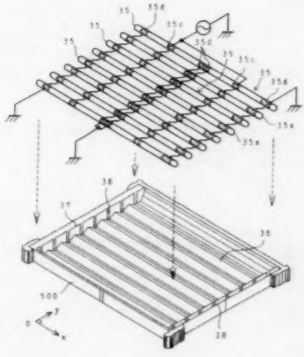
Seiichi Nishiyama; Shigetake Takaku; Yoshiharu Takeda, all of Mobara; Shigeo Mikoshiba, Tokyo; Tomokazu Shiga, Hachioji, and Koji Hashimoto, Chofu, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Electronic Devices Co., Ltd., Chiba-ken, both of Japan

Filed Nov. 26, 1999, Appl. No. 449,835

Claims priority, application Japan, Nov. 27, 1998, 10-336926

Int. Cl. H05B *41/00*

U.S. Cl. 362—260 **19 Claims**



1. A liquid crystal display comprising:

a liquid crystal display panel for modulating light to form an image, and a back light unit having at least one lamp tube without inside electrodes and which is discharged by outside electrodes disposed along an outer surface of said at least one lamp tube including a plurality of power supply electrodes and a plurality of ground electrodes, said back light unit being disposed behind said liquid crystal display panel;

wherein said outside electrodes include:

first and second power supply electrodes; and

first and second ground electrodes disposed between said first and second power supply electrodes.

US 6,331,065 B1

SLIDING HEADLINER IN A VEHICLE

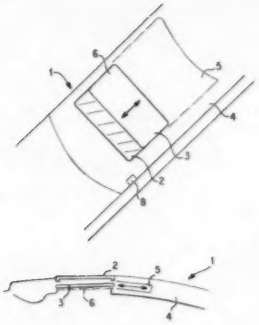
Bernd Wilms, Holzgerlingen, Germany, assignor to Daimler-Chrysler AG, Stuttgart, Germany

Filed Jan. 12, 2000, Appl. No. 482,208

Claims priority, application Germany, Jan. 21, 1999, 199 02 244

Int. Cl. F21W *101/02*

U.S. Cl. 362—493 **11 Claims**



1. A sliding headliner (**3**) for closing the region below a transparent roof element (**2**) comprising a surface-lighting unit (**6**) is arranged on the sliding headliner (**3**) on the inside of the vehicle.

US 6,331,066 B1

LIGHTED VEHICULAR MIRROR ASSEMBLY

John P. Desmond; Sean McCormack, both of Newbridge; Patrick J. Lawlor, Dublin, all of Islamic Rep. of Iran, and Rick Mousseau, Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation of application No. 09/371,871, filed on Aug. 6, 1999, now Pat. No. 6,183,119, which is a continuation of application No. 09/169,862, filed on Oct. 12, 1998, now Pat. No. 6,000,823, which is a continuation of application No. 08/634,333, filed on Apr. 12, 1996, now Pat. No. 5,820,245.

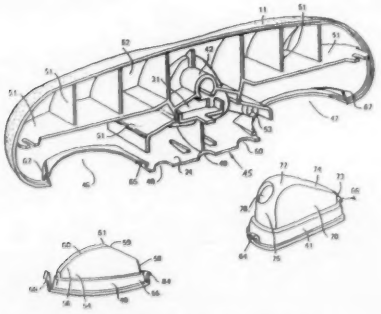
This application Nov. 14, 2000, Appl. No. 712,742.

Claims priority, application Islamic Rep. of Iran, Dec. 11, 1996, 950973

This patent is subject to a terminal disclaimer.

Int. Cl. F21W *101/02;* **F21V** *33/00*

U.S. Cl. 362—494 **25 Claims**



1. A lighted vehicular mirror assembly comprising:

a mirror case including a reflective element;

a support for mounting said vehicular mirror assembly on a vehicle;

a first lamp assembly comprising a first light source, a first reflector member, and a first lens;

a second lamp assembly comprising a second light source, a second reflector member, and a second lens;

said first lens fixedly attached to said first reflector member, and said second lens fixedly attached to said second reflector member;

each of said reflector members being shaped to direct light emitted by the respective one of said first and second light sources to form a pattern of light directed generally downwardly and rearwardly when that respective light source is electrically activated and said mirror assembly is mounted on the vehicle with said support, said first reflector member having a shape different from the shape of said second reflector member, said first lamp assembly directing light generally toward the lap area of the driver of the vehicle, said second lamp assembly directing light generally toward the lap area of a front seat passenger of the vehicle;

said reflector member and said lens in each of said first and second lamp assemblies working in conjunction with one another to collect and direct light to the respective area in the vehicle, said reflector member in each of said first and second lamp assemblies minimizing at least one of light bending, shaping and diffusing of light by its respective lens.

US 6,331,067 B1

MOTOR VEHICLE LAMP

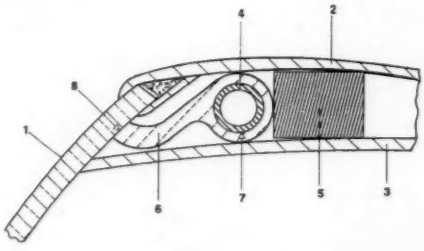
Martin Enders, Munich, Germany, assignor to Patent-Treuhand-Gesellschaft fuer elektrische Gluehlampen mbH, Munich, Germany

Filed May 19, 2000, Appl. No. 575,008

Claims priority, application Germany, May 26, 1999, 199 23 919

Int. Cl. F21V *8/00;* **F21W** *101/14*

U.S. Cl. 362—503 **7 Claims**



1. A motor vehicle lamp comprising:

a single piece optical conductor (**6**) having a light input surface defining an interior cavity, the optical conductor (**6**) providing an internally reflective guide leading from the input surface to a light exit surface (**8**) whose curvature is adapted to the curvature of a motor vehicle and directed to a field to be illuminated, and a light source (**4**) positioned in the interior cavity.

US 6,331,068 B1

FLEXIBLE LAMP MOUNTING

Lee A. Chase, Grand Rapids, Mich., assignor to Lacks Industries, Inc., Grand Rapids, Mich.

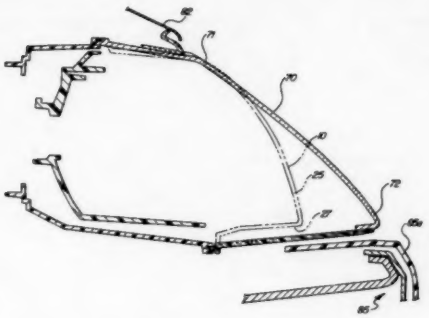
Continuation-in-part of application No. 09/252,437, filed on Feb. 18, 1999, now Pat. No. 6,900,030. This application Jan. 25, 2000, Appl. No. 491,046.

This patent is subject to a terminal disclaimer.

Int. Cl. F21V *7/18*

U.S. Cl. 362—549 **21 Claims**

1. An elastically deformable automobile lamp assembly for an automotive vehicle having at least one panel member and an



impact-absorbing bumper assembly spaced from said at least one panel member, said lamp assembly comprising:

a housing member mounted to said at least one panel member, said housing member further being located relative to said impacting-absorbing bumper assembly;

a lens member mounted to said housing member; and

at least one resilient deflection member interposed said lens member and said housing member, said at least one resilient deflection member having a predetermined yield strength so as to enable a predetermined elastic deformation of said lamp assembly whereby upon impact said at least one resilient deflection member does not exceed said predetermined yield strength of said at least one resilient deflection member so as to return said lamp assembly substantially to its pre-impact position without damage thereto upon removal of the impact force.

US 6,331,069 B1

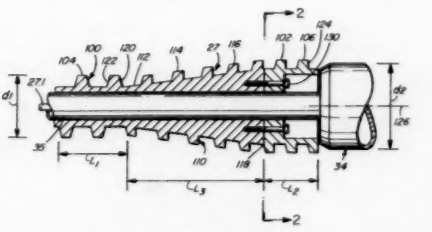
CONCRETE EXTRUSION MACHINE AND SPIRAL CONVEYOR THEREFOR

George Putti, 1586 Bay Road, North Vancouver, British Columbia, Canada, V7J 1A1

Filed Jan. 14, 1998, Appl. No. 7,152

Int. Cl. B29B *7/00;* **A21C** *1/06;* **B28C** *1/16;* **B01F** *7/08*

U.S. Cl. 366—89 **14 Claims**



1. A spiral conveyor for a concrete extrusion machine, the conveyor comprising:

a first spiral conveyor section, the first section being straight having a first length, a first external diameter, and flights of the first diameter, which is constant along the first length;

a second spiral conveyor section having a second length, the first section being spaced apart from the second section, the second section having flights of a second diameter, which is constant along the second the length and which is greater than the first diameter, and having two longitudinally divided components, each said component having a longitudinal recess;

a tapered, third spiral conveyor section between the first section and the second section, having a third length, a first end adjacent to the first section and a second end adjacent to the second section, the first end of the third section having the first external diameter and the second end of a third section having the second external diameter;

means for mounting the spiral conveyor in the extrusion machine; and

a hollow shaft adjacent to the second end of the third spiral conveyor section, the second spiral conveyor section being removably mounted on to the shaft, the shaft being received between the two components thereof.

US 6,331,070 B1

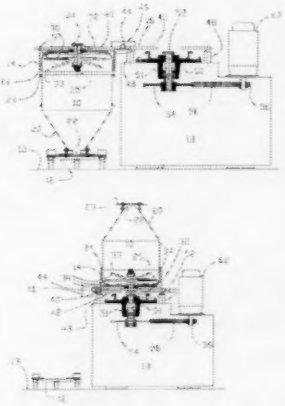
PROCESS AND APPARATUS FOR PARTICLE SIZE REDUCTION AND HOMOGENEOUS BLENDING OF INGREDIENTS IN A FLUIDIZED CHANGE CAN MIXER

Devendra Dahyabhai Desai, Missouri, Tex., assignor to Reliance Industries, Inc., Missouri City, Tex.

Filed Oct. 30, 2000, Appl. No. 699,602

Int. Cl. B01F *7/16*

U.S. Cl. 366—197 **15 Claims**



1. A material mixing apparatus comprising:

(a) a mixing vessel end closure having material mixing structure secured thereto for rotation about a mixing axis, said mixing structure having a first rotational drive coupling secured thereto;

(b) a second rotational drive coupling for transferring rotary power about a substantially fixed axis to said first rotational drive coupling; and,

(c) end closure support structure for translating said end closure substantially parallel with said fixed axis and rotating said end closure about an end closure inversion axis to engage said first rotational drive coupling with said second rotational drive coupling.

US 6,331,071 B2

STIRRING DEVICE

Shoko Akamine, Tokyo; Yasunao Miyazawa, and Shigenobu Maruoka, both of Urawa, all of Japan, assignors to Lintec Corporation, Tokyo, Japan

Continuation of application No. 09/437,152, filed on Nov. 10, 1999. This application Mar. 1, 2001, Appl. No. 795,123.

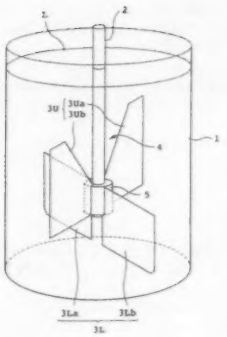
Claims priority, application Japan, Nov. 11, 1998, 10-321085; May 21, 1999, 11-142394

Int. Cl. B01F *7/18*

U.S. Cl. 366—325.92 **4 Claims**

1. A stirring device, comprising:

a vertical cylindrical stirring vessel;



a rotary shaft vertically extended within said stirring vessel for rotation; and

a stirring vane constituted of two or more generally rectangular vane plates vertically and directly supported on said rotary shaft in symmetrical relation with each other with respect to the rotary shaft;

wherein a recess is formed on an upper edge of an uppermost portion of said stirring vane so as to form a conical recess about said rotary shaft when said stirring vane rotates, said uppermost of said stirring vane being closest to a liquid surface; and

wherein a lower end of said stirring vane is arranged in the vicinity of a bottom surface of said stirring vessel.

US 6,331,072 B1

CONTINUOUS, CHAOTIC CONVECTION MIXER, HEAT EXCHANGER AND REACTOR

Wilfried Schierholz, Hocheim; Götz Lauschke, Frankfurt; Stefan Ott, Oberneisen; Ulrich Schmidt, Flörsheim, and Peter Hein, Friedberg, all of Germany, assignors to Axiva GmbH, Germany

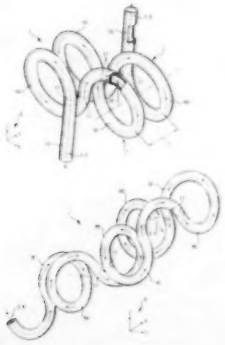
PCT No. PCT/EP98/04607, § 371 Date Jun. 8, 2000, § 102(e) Date Jun. 8, 2000, PCT Pub. No. WO99/04892, PCT Pub. Date Feb. 4, 1999

PCT Filed Jul. 22, 1998, Appl. No. 463,348

Claims priority, application Germany, Jul. 24, 1997, 197 31 891; Jul. 11, 1998, 198 31 247

Int. Cl. B01F *5/00*

U.S. Cl. 366—338 **20 Claims**



1. A device (**1**), in particular for mixing, for heat exchange or for carrying out reactions, having one or more through-flow elements (**2**) which have a center line (**3**) in the direction of flow, wherein the through low element(s) (**2**) is/are at least partially shaped or arranged such that the curve (**9**) formed by the center line(s) (**3**) approximately satisfies the following parametric representation:

$$\partial(t) = \begin{pmatrix} (-1)^{[t]}a(t)(\cos(2\pi t) - 1) \\ c(t)t \\ a(t)\sin(2\pi t) \end{pmatrix}$$

the parameters and constants having the following meaning:

∂(t) position vector in a Cartesian coordinate system (**8**),

t parameter along the curve (**9**), $-\infty \leqq t \leqq +\infty$,

[t] integral fraction of t,

a(t) a radius of curvature (**10**), where $0<|a(t)|<\infty$,

c(t) a spacing parameter, where $0<|c(t)|<\infty$.

US 6,331,073 B1

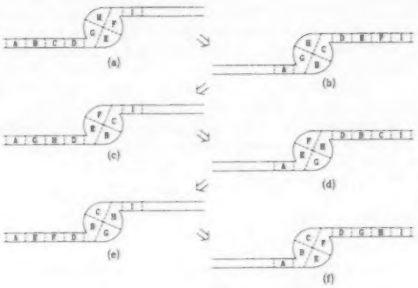
ORDER-CHANGING MICROFLUIDIC MIXER

Yung-Chiang Chung, Chutung, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 20, 2000, Appl. No. 692,461

Int. Cl. B01F *13/00*

U.S. Cl. 366—341 **10 Claims**



4. A order-changing microfluidic mixer comprising:

an extended microfluid channel in which a microfluid may be transported; and

an order-changing chamber having first and second side portions, said chamber positioned in said microfluid channel and dividing said microfluid channel into a first and second section,

wherein when said microfluid moves through said order-changing chamber having first and second sides from the first section of said microfluid channel to the second section so that portions of said microfluid positioned adjacent to the first side of said order-changing chamber remain unmoved.

US 6,331,074 B1

THERMAL ANALYZER AND A METHOD OF MEASURING WITH THE SAME

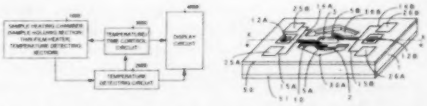
Mitsuteru Kimura, Miyagi-gun, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan, a part interest

Filed Jan. 16, 1998, Appl. No. 8,081

Claims priority, application Japan, Jan. 17, 1997, 9-007070; Feb. 18, 1997, 9-034077

Int. Cl. G01N *25/00*

U.S. Cl. 374—10 **27 Claims**



1. A thermal analyzer for scanning temperature by thermally altering a sample and measuring a thermal change based on physi-

cal and chemical changes of said sample as a function of at least one of temperature and time comprising:

a monolithic heat-generating section configured to heat a sample, said monolithic heat-generating section being monolithically formed on a substrate and including

a thin-film heater, and

a cavity section, said cavity section being formed in a lower section of the thin-film heater and forming a sample holding section configured to hold said sample; and

a temperature detecting section configured to detect a temperature of said sample holding section;

wherein said sample holding section and said temperature detecting section are monolithic and are formed on said thin-film heater.

US 6,331,075 B1

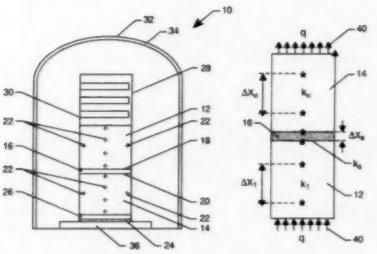
DEVICE AND METHOD FOR MEASURING THERMAL CONDUCTIVITY OF THIN FILMS

Tahani R. Amer, Yorktown, Va.; Chelakara Subramanian, North East Palm Bay, Fla.; Billy T. Upchurch, Virginia Beach, Va.; David W. Alderfer, Newport News, Va.; Bradley S. Sealey, Newport News, Va., and Cecil G. Burkett, Jr., Newport News, Va., assignors to Administrator, National Aeronautics and Space Administration, Washington, D.C.

Provisional application No. 60/083,971, filed on May 1, 1998. This application Apr. 30, 1999, Appl. No. 303,725.

Int. Cl. G01N *25/18*

U.S. Cl. 374—44 **18 Claims**



1. A device for measuring the thermal conductivity of a sample, comprising:

an upper slab and a lower slab, said upper slab adjacent to the upper surface of said sample and said lower slab adjacent to the lower surface of said sample, said upper and lower slabs sandwiching said sample in a columnar arrangement, said sample and said slabs forming a sandwiched assembly;

a heat source for heating said lower slab;

a heat sink for cooling said upper slab and for providing contact pressure onto said specimen;

said upper and lower slabs, said heat source, and said heat sink forming a sandwiched assembly;

a plurality of thermocouples embedded within and flush with the surfaces of said upper and lower slabs, for measuring the temperature difference across said specimen, further wherein said plurality of thermocouples comprise, at least, one thermocouple embedded at the center of each of the upper and lower surfaces of said upper and lower slabs, one thermocouple embedded at the center of each of the diametrically opposite outer exposed surfaces of said upper and lower slabs, and two thermocouples embedded equidistance along the axial center line within each said upper and lower slabs;

insulation means placed at each axial end of said sandwiched assembly to prevent conduction losses;

a measuring chamber enclosing said sandwiched assembly and said insulation means, said measuring chamber comprising a vacuum environment having a pressure between approximately 10^{-3} to 10^{-6} Torr;

an anti-radiant shield disposed on the entire interior periphery of said measuring chamber;

a temperature controlled water circulator for transferring and receiving water from said heat sink; and

a multi-channel data acquisition means for acquiring and supplying data to an on-line computer processing means; wherein said on-line computer processing means processes said data.

US 6,331,076 B1

SOLDER PASTE WITH A TIME-TEMPERATURE INDICATOR

Brian M. Coll, Salthill, Ireland, assignor to Manufacturers' Services Ltd., Concord, Mass.

Filed Oct. 30, 1998, Appl. No. 183,680

Int. Cl. G01K *11/00*

U.S. Cl. 374—102 **21 Claims**

1. A solder paste product comprising:

a container;

solder paste contained within the container; and

a time-temperature indicator positioned on the container to measure the solder paste's cumulative exposure to temperature, the indicator having a time-temperature profile corresponding to a time-temperature profile of the solder paste.

16. A method for monitoring the temperature of solder paste comprising:

providing solder paste in a container, the solder paste having a time-temperature profile;

providing a time-temperature indicator having a time-temperature profile corresponding to the time-temperature profile of the solder paste;

attaching the time-temperature indicator to the container; and

monitoring changes in the time-temperature indicator, the cumulative changes in the indicator corresponding to changes in the useful life of the solder paste caused by temperature.

US 6,331,077 B1

BULK BAG FOR DENSE MATERIALS

Craig A. Nickell, Sherman, Tex., assignor to Super Sack Mfg. Corp., Dallas, Tex.

Filed Jan. 7, 2000, Appl. No. 479,812

Int. Cl. B65D *33/02*

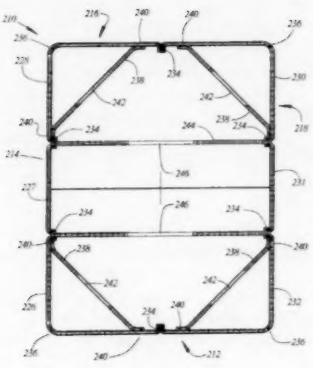
U.S. Cl. 383—119 **5 Claims**

1. A bulk bag for dense materials comprising:

four side panels each seamed to at least one adjacent side panel to form four side walls having first and second ends and defining an interior area substantially rectangular in shape;

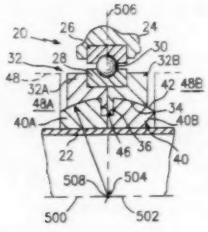
at least one end wall having four corners and seamed to the first ends of the side walls with the seams connecting the side panels to form the side walls located at points substantially spaced from the adjacent corners of the end wall;

four baffles each extending diagonally across one of the corners of the end wall and having opposite ends each seamed to one of the side panels; and



a pair of additional baffles extending in parallel entirely across the end wall and having opposite ends seamed to opposite side walls of the bulk bag.

US 6,331,078 B1
TURBINE ENGINE BEARING
Keven G. Van Duyn, Bloomfield, Conn., assignor to United Technologies Corporation, East Hartford, Conn.
Provisional application No. 60/113,747, filed on Dec. 23, 1998. This application May 19, 1999, Appl. No. 314,923.
Int. Cl. F16C *17/24*
U.S. Cl. 384—498 **24 Claims**



1. A bearing system for rotatably coupling a shaft member to an outer member for relative rotation about a bearing axis initially coincident with a shaft axis and an outer member axis, comprising:

an inner bearing element associated with and coupled to the shaft;

an outer bearing element associated with and coupled to the outer member;

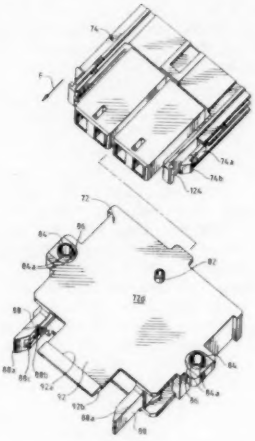
wherein a first of said inner and outer bearing elements is coupled to its associated member of the shaft member and outer member via a coupling having:

a first coupling member having a doubly convex outer surface portion; and

a second coupling member having a doubly concave inner surface portion contacting the doubly convex outer surface portion; and

a trunnion stiffness which upon experiencing a trunnion moment above a threshold moment releases from an initial stiffness to a reduced stiffness less than the initial stiffness, entering a released condition and allowing relative sliding of the doubly convex outer surface portion and the doubly concave inner surface so as to permit the shaft axis to locally rotate out of parallel with the outer member axis.

US 6,331,079 B1
MOUNTING SYSTEM FOR A CONNECTOR ASSEMBLY TO A SUBSTRATE
Igor Grois, Northbrook; Wenzong Chen, Naperville, both of Ill., and Jeffrey A. Matasek, Cedarburg, Wis., assignors to Molex Incorporated, Lisle, Ill.
Filed Dec. 7, 1999, Appl. No. 456,198
Int. Cl. G02B *6/36;* **G03B** *6/38*
U.S. Cl. 385—53 **19 Claims**



1. A system for mounting a connector assembly to a substrate, comprising:

a substrate including at least one pre-placement hole and at least one positioning hole; and

a connector housing having a pre-placement peg sized for insertion into said pre-placement hole in the substrate with substantially zero insertion forces to generally place the housing on the substrate and a positioning peg sized for insertion into said positioning hole in the substrate by a press-fit to precisely fix the housing on the substrate, the pre-placement peg being longer than the positioning peg, whereby the pre-placement peg can be inserted first into the pre-placement hole

and the housing can be easily pivoted about the pre-placement peg until the positioning peg is aligned with the positioning hole.

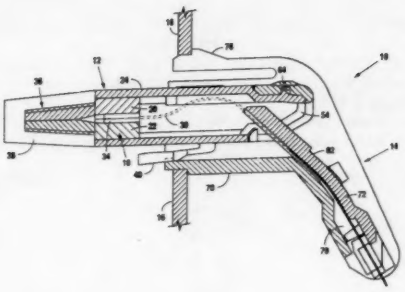
US 6,331,080 B1
OPTICAL FIBER CONNECTOR USING COLORED PHOTOCURABLE ADHESIVE
Brian M. Cole; William V. Dower, both of Austin, Tex., and Joel D. Oxman, Minneapolis, Minn., assignors to 3M Innovative Properties Company, St. Paul, Minn.
Continuation-in-part of application No. 09/116,142, filed on Jul. 15, 1998. This application Oct. 9, 1998, Appl. No. 169,367.
Int. Cl. G02B *6/36*
U.S. Cl. 385—80 **3 Claims**

1. A fiber optic connector comprising:

a) at least one fiber optic cable comprising at least one optical fiber surrounded by a plurality of strengthening fibers, both of which are surrounded by at least one polymeric coating layer, a portion of said cable being stripped in a layerwise manner such that a terminal end of exposed fiber is succeeded by an area of exposed strengthening fibers, succeeded by an area of coated cable;

b) a holder for said optical cable, and

c) a colored adhesive injected into said holder, said adhesive comprising



i) an adhesive component having a viscosity betwveen about 200 centipoise and about 5000 centipoise,

ii) a colorant which is soluble in the adhesive component, said colorant having a first color before exposure to radiation having a wavelength of from about 400 to about 1100 nanometers, and a second color after exposure to said radiation, and

iii) an initiator system to cure the adhesive composition by exposure to said radiation,

said optical fiber, said strengthening fibers and said holder being by means of exposure to said radiation wherein said cure onset occurs within sixty seconds.

US 6,331,081 B1

OPTICAL TRANSMISSION MEMBER AND MANUFACTURING METHOD THEREFOR

Kenichiro Ohtsuka; Tomohiko Ueda, and Toshiaki Kakii, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

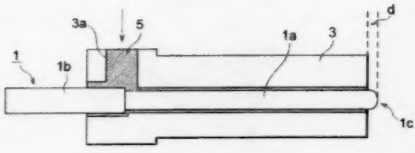
PCT No. PCT/JP98/01019, § 371 Date Sep. 13, 1999, § 102(e) Date Sep. 13, 1999, PCT Pub. No. WO98/40772, PCT Pub. Date Sep. 17, 1998

PCT Filed Mar. 11, 1998, Appl. No. 380,733

Claims priority, application Japan, Mar. 13, 1997, 9-059664; Oct. 6, 1997, 9-272856

Int. Cl. G02B *6/36*

U.S. Cl. 385—85 **14 Claims**



1. An optical transmission component in which one or a plurality of optical fibers are fixed to a main body of said optical transmission component with one end face of each optical fiber being exposed, and thus exposed end face is used as a connecting end face to be optically connected to another optical transmission component,

the end face of each said optical fiber on the connecting end face being subjected to discharge processing, thus processed end face projecting from the connecting end face of said main body by a predetermined amount and a core portion projects from a cladding portion at said connecting end face.

US 6,331,082 B1

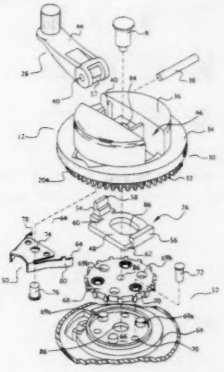
CAMERA WITH COMBINED FILM ADVANCE/REWIND MECHANISM

Wilfried Bittner, Tsuen Wan, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Concord Camera Corp., Hollywood, Fla.

Filed Sep. 22, 1999, Appl. No. 400,965

Int. Cl. G03B *1/00;19/02*

U.S. Cl. 396—413 **30 Claims**



1. A camera that has a film cassette compartment for receiving a film cassette that has a light lock door and that has a film path defined between the film cassette compartment and a film spool, comprising:

a rotatable wheel, rotatably mounted to the camera, that moves film from the film cassette into the film path and around the film spool when the wheel is rotated in a first direction and that moves film from the film spool into the film path and into the film cassette when the wheel is rotated in a second direction;

a rewind crank, rotatably mounted to the camera and coupled to the wheel, that has a first position and a second position; and

an interlock, coupled to the rewind crank, the interlock being engageable and disengageable with the wheel and being responsive to movement of the rewind crank between the first position and the second position, to engage the wheel to prevent rotation of the wheel in the first direction when the rewind crank is in the second position, and to engage the wheel to prevent rotation of the wheel in the second direction when the rewind crank is in the first position.

US 6,331,083 B1

INDIVIDUAL KEY COVERS FOR COMPUTER KEYBOARDS

Brook Lee Harris, 1701 Albert St., St. Paul, Minn. 55113

Provisional application No. 60/204,605, filed on May 16, 2000. This application Aug. 7, 2000, Appl. No. 633,745.

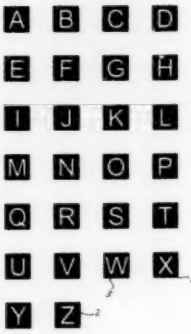
Int. Cl. B41J *5/12*

U.S. Cl. 400—493 **2 Claims**

1. Key covers for being affixed to individual keys of a computer keyboard, each of said key covers consisting of:

a thin flat generally rectangular piece of plastic material which is approximately the same size as the key it is intended to cover;

said piece of plastic material consisting of a colored background and a large fluorescent letter of a color contrasting with said background, said large fluorescent letter being colored by means of fluorescent ink and being coated on top by a coating material in order to prevent said fluorescent ink from wearing away, said letter corresponding to a letter on the key to which said cover is to be affixed;

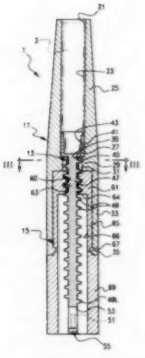


said cover having on its bottom surface adhesive means for firmly but removably affixing said cover to its corresponding key.

US 6,331,084 B1
CONTAINER FOR FEEDING STICK TYPE COSMETIC MATERIAL

Atsushi Ohba, Tokyo, Japan, assignor to Suzuno Kasei Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP98/05887, § 371 Date Jul. 14, 2000, § 102(e) Date Jul. 14, 2000, PCT Pub. No. WO99/33373, PCT Pub. Date Jul. 8, 1999
PCT Filed Dec. 24, 1998, Appl. No. 529,670
Claims priority, application Japan, Dec. 25, 1997, 9-366309
Int. Cl. A45D *40/04*
U.S. Cl. 401—68 **11 Claims**



1. A container for feeding a stick type cosmetic material comprising:

a chuck for retaining a stick type cosmetic material;

a front cylinder which has an internal hole for guiding the chuck to easily slide in an axial direction;

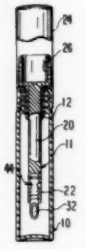
a push rod which is connected with the chuck and also has external-thread-shaped projections on its outside surface; and

a body cylinder which is rotatably connected with the front cylinder and also has internal threads to be spirally engaged with the external-thread-shaped projections of the push rod, wherein unevennesses having an almost same section are formed on a periphery surface of the external-thread-shaped projections of the push rod, and synchronous engagement unevennesses, which are engaged with the unevennesses to prevent relative rotation between the push rod and the front cylinder, are formed on an inside surface of the front cylinder.

US 6,331,085 B1
CONTAINER-APPLICATOR SYSTEM FOR MATERIAL FOR THE SKIN

Volker Schrepf, East Islip, and Michael Malvar, Oceanside, both of N.Y., assignors to Henlopen Manufacturing Co., Inc., Melville, N.Y.

Provisional application No. 60/151,526, filed on Aug. 30, 1999. This application Aug. 10, 2000, Appl. No. 636,017.
Int. Cl. B43M *11/00*
U.S. Cl. 401—128 **10 Claims**

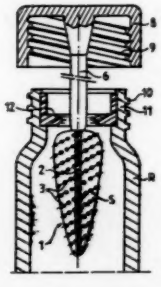


1. A container-applicator system for material to be applied to the human skin, comprising, in combination, a container for holding a body of the material, said container having an opening; a flexible wiper mounted in the opening; and an applicator insertable into and withdrawable from said container through the opening for transporting a quantity of the material from the container and applying the transported quantity of material to a user's skin, the wiper engaging the applicator to remove excess amounts of material therefrom as the applicator is withdrawn through the opening, the applicator comprising a generally cylindrical elastomeric tip with a long axis, the tip including a distal end portion having a distal extremity with at least one material-holding concavity formed therein, and said one concavity having a rim.

US 6,331,086 B2
MAKE-UP BRUSH AND METHOD FOR MANUFACTURING SUCH A BRUSH

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Continuation of application No. 08/512,952, filed on Aug. 10, 1995, now Pat. No. 6,227,735, which is a continuation of application No. 08/179,700, filed on Jan. 11, 1994, now abandoned. This application Jan. 5, 2001, Appl. No. 754,285.
Claims priority, application France, Feb. 8, 1993, 93 01344
This patent is subject to a terminal disclaimer.
Int. Cl. A46B *11/00*
U.S. Cl. 401—129 **95 Claims**

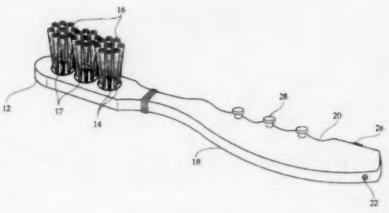


50. A device for storing and applying mascara, comprising:

a container containing mascara and including an open end; and

a stem, one end of said stem being attached to a cap and the other end being attached to a brush for applying mascara, said

cap being adapted to close said open end when said brush is inserted into said container through said open end, said container being equipped with a wiper located in the vicinity of said open end of said container for wiping said brush when it is withdrawn from the container, and wherein said brush comprises a twisted wire core having branches extending from a bend in the core and forming helical turns about an axis of said core and holding layers of radially extending bristles, and further wherein, when an observer views the brush substantially vertically from the front, the helical turns rise from the left to the right, an end of the core opposite to the bend being connected to the stem.



US 6,331,087 B1

COMBINATION PEN AND TOOL ARRANGEMENT

Chen-Shan Wang, 1F. No. 13, Alley 15, Lane 22, Hwalin Street, Shihlin District, Taipei, Taiwan

Filed Feb. 15, 2001, Appl. No. 783,016
Int. Cl. B43K *29/18;* **B26B** *11/00*
U.S. Cl. 401—195 **6 Claims**

1. A combination pen and tool arrangement comprising

a lower penholder, said lower penholder having an ink cartridge holder cap fastened to a top end thereof to hold an ink cartridge on the inside for writing;

an upper penholder fastened to said ink cartridge holder cap outside said lower penholder, said upper penholder comprising a longitudinal slot;

a plastic tool holder mounted inside said upper penholder, said tool holder comprising a longitudinal slot corresponding to the longitudinal slot of said upper penholder; and

at least one tool pivoted to said plastic tool holder and turned in and out of said tool holder and said upper penholder through the longitudinal slot of said tool holder and the longitudinal slot of said upper penholder.

US 6,331,088 B2

TOOTHBRUSH WITH MULTIPLE PUMPING SYSTEMS

Zena Elizabeth Owens, 13813 S. Catalina Ave., Gardena, Calif. 90247

Continuation-in-part of application No. 09/397,604, filed on Sep. 16, 1999. This application Jan. 8, 2001, Appl. No. 756,001.
Int. Cl. A46B *11/04*
U.S. Cl. 401—282 **9 Claims**

1. A toothbrush with multiple pumping systems for cleaning teeth of a user and allowing toothpaste, mouthwash, and antibacterial rinse to be pumped independently from the toothbrush, comprising:

a head portion having a generally rectangular configuration, the head portion having a planar upper surface, a planar lower surface and a hollow interior, the planar upper surface having three rings of a plurality of outlet ports formed therein, a plurality of bristles are secured in the outlet ports;

an elongated handle portion removably coupling with the head portion, the handle portion having a hollow interior in communication with the hollow interior of the head portion, the handle portion having indentations formed within a side wall thereof for accommodating a hand of the user, the handle portion having a motor disposed therein in communication with the rotating bristles of the head portion;

three manual pumps disposed within the handle portion, each having a plunger which is operable by the user;

three reservoirs, each reservoir containing one of liquid toothpaste, mouthwash, and antibacterial rinse;

three delivery tubes removably disposed within the head portion and the handle portion disposed between the outlet ports of the head portion and the three pumps; and

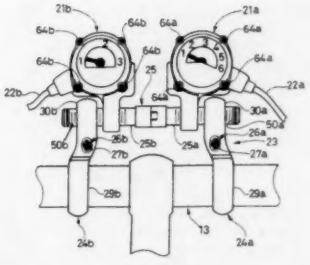
a carrying case adapted for holding the head portion, handle portion, adapter, and the three tubes therein, the carrying case containing a spare head portion therein.

US 6,331,089 B1

MOUNTING DEVICE FOR BICYCLE COMPONENT

Yoshihide Iteya, Izumisano, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Feb. 29, 2000, Appl. No. 516,091
Int. Cl. F16C *11/06*
U.S. Cl. 403—56 **28 Claims**



6. A mounting device adapted to be coupled to a portion of a bicycle, said bicycle mounting device comprising:

a bar clamp having a bar clamping portion adapted to be coupled to the portion of the bicycle and a support portion spaced from said bar clamping portion, one of said bar clamping portion and said support portion having a ball joint with a mounting bore formed therein; and

a support member slidably coupled to said support portion and adapted to support at least one bicycle component thereon,

said bar clamping portion being laterally offset from said support portion when mounted on the portion of the bicycle,

each of said bar clamping portion and said support portion having a split ring section with a mounting bore that is adjustable in size by at least one fastener

said at least one fastener being a single fastener that adjusts the size of said mounting bores of both of said split ring sections.

US 6,331,090 B1

DEVICE FOR CONNECTING CONTAINERS

Svein Rene, Tonsberg, Norway, assignor to Uniteam ASA, Oslo, Norway

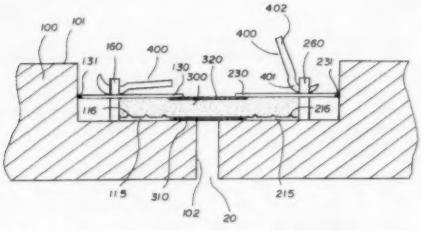
PCT No. PCT/NO98/00308, § 371 Date Apr. 17, 2000, § 102(e) Date Apr. 17, 2000, PCT Pub. No. WO99/20546, PCT Pub. Date Apr. 29, 1999

PCT Filed Oct. 12, 1998, Appl. No. 509,562

Claims priority, application Norway, Oct. 17, 1997, 19974828

Int. Cl. B65D *1/30*

U.S. Cl. 403—286 **10 Claims**



1. Device for establishing a connection in a horizontal plane between two or more containers (**100**, **200**) of the iso-container type, the device including a substantially band shaped, elastic sealing member (**300**) which surrounds a free opening (**20**) between the containers to be connected and which is arranged on a supporting surface (**105**), pressure exerting member (**130**) to hold the sealing member (**300**) tightly against the supporting surface (**105**), and tightening member (**400**) to force the sealing member (**300**) against the supporting surface (**105**), characterized in that the sealing member (**300**) in mounted position is arranged with a generally rectangular cross section and is placed on a supporting surface (**105**) on the respective containers, that the pressure exerting member constitutes at least four generally band shaped members (**130**) arranged at the respective flat supporting surfaces (**105**) of a container (**100**), whereas the pressure exerting member (**130**) is connected to the container with a hinge member (**131**) along one of its long edges so that it can swing from an elevated position to a lower position and being provided with openings (**132**), that a plurality of holding members (**160**) are firmly attached to the supporting surface (**105**) and are evenly distributed along the entire opening, and that a plurality of tightening members (**400**) are arranged to enter the respective holding members (**160**) to force the pressure exerting member (**130**) against the sealing member (**300**) and the supporting surface (**105**).

US 6,331,091 B2

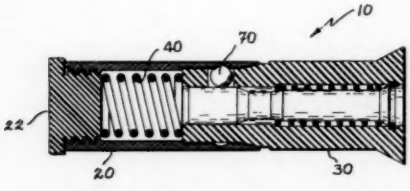
CONTROL-ROD ACTUATED AXLE ASSEMBLY

Gary A. Cross, 5106 W. Roberts Dr., Santa Ana, Calif. 92704

Continuation of application No. 09/218,716, filed on Dec. 22, 1998, now abandoned. This application Feb. 28, 2001, Appl. No. 796,582.

Int. Cl. F16B *1/00*

U.S. Cl. 403—322.2 **3 Claims**



1. A control-rod actuated axle apparatus comprises a pair of cylindrical axle portions with one of the axle portions adapted for receiving the other of the axle portions for mutual engagement in unitary axial alignment, thereby imparting a first potential energy to a first biasing means within the one of the axle portions; and a control rod engaged within the other of the axle portions and positioned by a second biasing means for forcing at least one locking elements into positions for locking the pair of axle portions; the control rod axially movable for positioning a reduced diameter portion of the control rod for enabling the locking elements to unlock the axle portions for separation thereof, the first biasing means forcing the axle portions apart by releasing the first potential energy thereof; further comprising a retaining means engaged within the other of the axle portions for retaining the second biasing means therewithin; wherein the retaining means is a retaining ring of a spring temper material, removably fitted into a circular retaining slot within the other of the axle portions.

US 6,331,092 B1

CORNER JOINT FOR PROFILE SECTIONS

Mats Linger, Karsegardon, 439 00 Onsala, Sweden

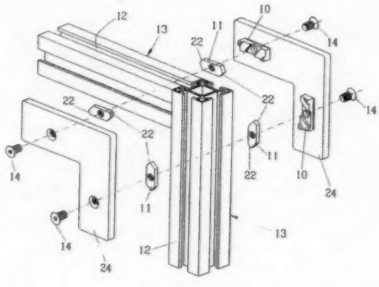
PCT No. PCT/SE96/00401, § 371 Date Jun. 26, 1998, § 102(e) Date Jun. 26, 1998, PCT Pub. No. WO96/30658, PCT Pub. Date Oct. 3, 1996

PCT Filed Mar. 27, 1996, Appl. No. 930,958

Claims priority, application Sweden, Mar. 31, 1995, 9501188

Int. Cl. F16B *9/00*

U.S. Cl. 403—382 **3 Claims**



1. A corner joint for profile sections provided with nut means and one or more longitudinal channels in connection with the outside of the profile section via a longitudinal slot opening, the longitudinal slot opening extending in substantially the same direction as the longitudinal channels, the channels constituting an attachment to the nut means which cooperates via screw means with connector fittings, wherein each screw means is provided with a lock means which is located in the slot opening between the nut means and the connector fittings, which the lock means is provided with a screw opening and means for locking the nut means against rotation out of a locking position characterized in:

that the lock means is provided with at least a first planar surface, in the form of a countersink for receiving and fixation of a portion of the nut means in a first, locked position, in which the nut means is located substantially across from the slot opening;

that the lock means, at a different level, is provided with a second planar surface, being substantially parallel to the first planar surface, for receiving the nut means in a second, unlocked position, in which the nut means is located substantially parallel with the slot opening, and;

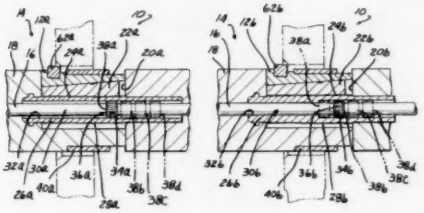
that the second surface of the lock means is provided with at least one boss, which cooperates with a shoulder on the nut means to stop the nut means during rotation from the first, locked position to the second, unlocked position, the angle of rotation being less than 90°.

US 6,331,093 B1

COMPENSATOR FOR MULTI-TOOL BORING BAR

John Graham, Clinton Township; Robert B. Raible, Ortonville, and Johann S. Klimach, Clinton Township, all of Mich., assignors to Ex-Cello Machine Tools, Inc., Sterling Heights, Mich.

Filed Dec. 28, 1999, Appl. No. 473,437
Int. Cl. B23B *1/00;39/24*
U.S. Cl. 408—1 R **42 Claims**



1. An apparatus for radially adjusting a position of a plurality of tool cartridges of a machine tool having rotatable, concentric, elongate, inner and outer drive spindles with a plurality of pockets formed in the outer drive spindle exposing a portion of the inner drive spindle, the apparatus comprising:

a wedge disposed in each pocket for movement relative to the longitudinal axis of the elongate inner drive spindle in response to relative rotation of the inner drive spindle with respect to the outer drive spindle when the inner drive spindle is in a predetermined selectable position with respect to each pocket;

a rotatable member disposed in each pocket operably connected to the wedge and being selectively operably engageable with a portion of the inner drive spindle to cause rotation of the rotable member in response to rotation of the inner drive spindle with respect to the outer drive spindle when the inner drive spindle is in the predetermined selectable position with respect to each pocket, the rotatable member having a threaded external surface operably engagable to move the rotatable member longitudinally in response to rotation of the rotatable member; and

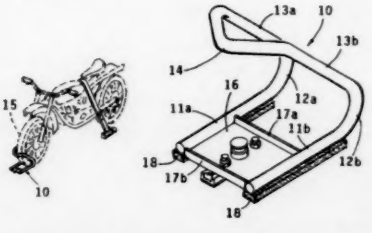
a tool cartridge operably engaged within each pocket of the outer drive spindle for radial movement relative to the longitudinal axis of the outer drive spindle in response to relative movement of the corresponding wedge.

US 6,331,094 B1

WHEEL CHOCK FOR USE IN TRANSPORTING A CYCLE ON A VEHICLE

Ward C. Burrows, Pasadena, Calif., assignor to Ancra International, LLC., Hawthorne, Calif.

Filed Oct. 17, 2000, Appl. No. 690,148
Int. Cl. B06P *7/08*
U.S. Cl. 410—30 **8 Claims**



1. A wheel chock for retaining a cycle on the floor of a vehicle for transportation thereon comprising:

a bar bent to form opposing bottom portions, opposing side portions and a top portion;

a substantially flat plate forming a base attached to said bar bottom portions;

a pair of longitudinally spaced studs attached to said plate and extending from the bottom surface thereof;

a plunger attached to said plate and longitudinally spaced from said studs and extending from the bottom surface of said plate; and

a track having a plurality of openings formed therein with opposing ledges formed between each of said openings;

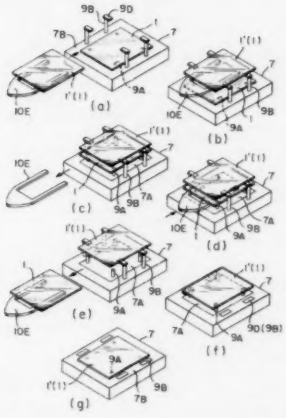
said spaced studs fitting into said track openings and being positionable under said ledges, said plunger being positionable in one of said openings when said studs are positioned under the ledges, thereby removably retaining said plate to said track.

US 6,331,095 B1

TRANSPORTATION SYSTEM AND PROCESSING APPARATUS EMPLOYING THE TRANSPORTATION SYSTEM

Tsutomu Hiroki, Yamanashi-ken, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Filed Apr. 2, 1999, Appl. No. 285,103
Claims priority, application Japan, Apr. 4, 1998, 10-108577
This patent is subject to a terminal disclaimer.
Int. Cl. B65H *1/14*
U.S. Cl. 414—222.01 **6 Claims**



1. A processing apparatus for processing a substrate, comprising:

a processing chamber for processing the substrate;

a table arranged in the processing chamber provided with an electrode which allows the substrate to be placed thereon;

a transporting chamber in communication with the processing chamber;

closing means for separating the atmosphere of the processing chamber from an atmosphere of the transporting chamber;

a lifting mechanism for lifting the substrate in the processing chamber, the lifting mechanism including:

first lifters arranged on the table and provided with placing surfaces for placing the substrate thereon, the first lifters being movable in a vertical direction to a first height, and

second lifters arranged on the table outside the first lifters and provided with placing surfaces for placing the substrate thereon, the second lifters being movable in a vertical direction to a second height, and comprising:

a supporting pin rotatable about a longitudinal axis thereof, and

a supporting plate fixed to an end of the pin, the supporting plate comprising the placing surface for the substrate,

wherein a rotation of the pin causes a part of the supporting plate to extend over the electrode; and

a transporting mechanism provided in the transporting chamber, which includes:

a transporting member provided with at least one support surface for supporting the substrate, the supporting surface being arranged on a single horizontal plane, and

a horizontal driving mechanism for moving the transporting member between a position above the table and a position in the transporting chamber.

US 6,331,096 B1

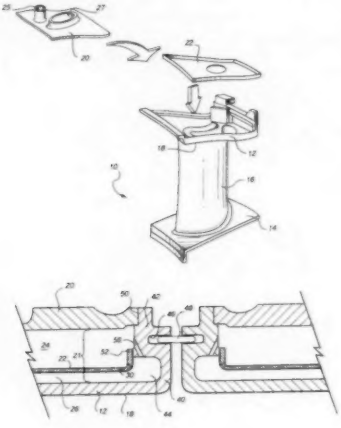
APPARATUS AND METHODS FOR IMPINGEMENT COOLING OF AN UNDERCUT REGION ADJACENT A SIDE WALL OF A TURBINE NOZZLE SEGMENT

Steven Sebastian Burdgick, Schenectady, N.Y., and Gary Michael Itzel, Simpsonville, S.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 5, 2000, Appl. No. 543,457

Int. Cl. F01D *25/08*

U.S. Cl. 415—115 **13 Claims**



1. For use in a gas turbine, a nozzle segment having outer and inner bands and at least one vane extending between said bands, at least one of said bands including a nozzle wall defining in part a hot gas path through the turbine, a cover radially spaced from said nozzle wall defining a chamber therebetween and an impingement plate secured within said segment and disposed in said chamber to define with said cover a first cavity on one side thereof for receiving a cooling medium, said impingement plate on an opposite side thereof from said first cavity defining with said nozzle wall a second cavity, said impingement plate having a plurality of apertures therethrough for flowing the cooling medium from said first cavity into said second cavity for impingement cooling said nozzle wall, said nozzle segment including a side wall extending generally radially between said nozzle wall and said cover and having an inturned flange spaced from said nozzle wall, said inturned flange defining with said nozzle wall and said side wall an undercut region adjacent said side wall, and a plurality of apertures through said inturned flange for flowing the cooling medium from said first cavity for impingement cooling the side wall in the undercut region.

US 6,331,097 B1

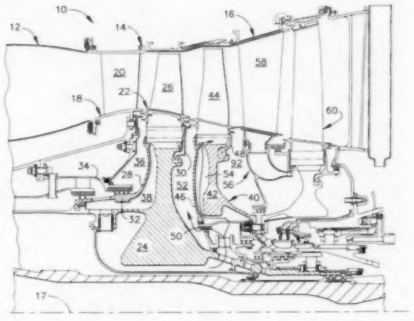
METHOD AND APPARATUS FOR PURGING TURBINE WHEEL CAVITIES

Richard W. Jendrix, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 30, 1999, Appl. No. 410,239

Int. Cl. F01D *5/08*

U.S. Cl. 416—96 R **19 Claims**



1. A turbine rotor having a primary gas stream passing therethrough and a wheel cavity located adjacent thereto, said wheel cavity being in fluid communication with said primary gas stream, said turbine rotor comprising:

rotor disk having at least one disk slot formed therein;

a blade having internal cooling passages disposed in said disk slot, wherein a plenum in fluid communication with said internal cooling passages is defined by said disk slot and said blade; and

means for directing air from said plenum to said wheel cavity.

US 6,331,098 B1

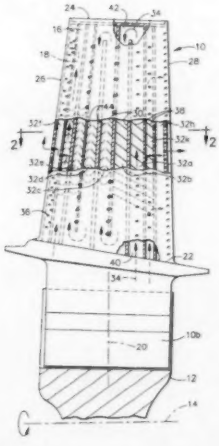
CORIOLIS TURBULATOR BLADE

Ching-Pang Lee, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 18, 1999, Appl. No. 466,155

Int. Cl. B63H *1/14*; **F01D** *5/08*

U.S. Cl. 416—97 R **20 Claims**

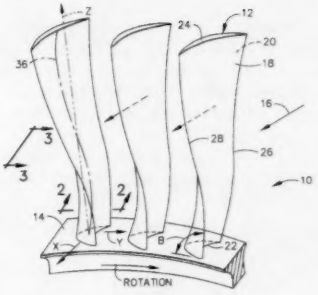


1. A turbine rotor blade comprising:

pressure and suction sidewalls extending longitudinally in span from root to tip, and extending in chord between leading and trailing edges;

said sidewalls being spaced laterally apart between said leading and trailing edges, and joined together by chordally spaced apart partitions extending longitudinally between said root and tip to define a flow channel for channeling a coolant therethrough; and

said blade having twist to offset laterally said channel from said leading edge toward said trailing edge, and said channel having a row of slant turbulators spaced apart longitudinally and all inclined inward toward said root and trailing edge for directing said coolant along said turbulators co-directionally with Coriolis flow inside said channel.

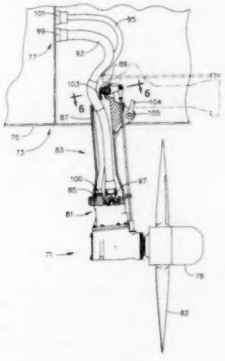


US 6,331,099 B1

FLEXIBLE HOSES COMMUNICATING WITH A DEPLOYABLE HYDRAULIC POWER ASSEMBLY

Steven Robert Eccles, Torrance, and Wayne Godoy Schindler, Huntington Beach, both of Calif., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Dec. 8, 1999, Appl. No. 457,506
Int. Cl. F01D *5/00*
U.S. Cl. 416—142 **19 Claims**



14. An apparatus for fluid communication comprising:

power means for generating power;

at least one flexible hose for communicating fluid between said power means and a device capable of being powered by said power means;

a coordinate system having an origin;

the device being in a fixed location in the coordinate system and said power means being located on a radius rotatable about the origin; and

said radius being a strut for channeling said at least one flexible hose.

US 6,331,100 B1

DOUBLED BOWED COMPRESSOR AIRFOIL

Hsin-Tuan Liu, West Chester; Robert B. Dickman, Cincinnati; Kenneth W. Krabacher, Hamilton; Gregory T. Steinmetz, Cincinnati; Brent F. Beacher, Hamilton, and Bryan K. Doloresco, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 6, 1999, Appl. No. 455,826
Int. Cl. F01D *5/14*
U.S. Cl. 416—238 **12 Claims**

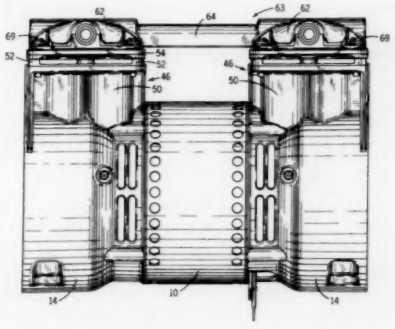
9. A compressor rotor airfoil comprising a double bowed tangential stacking axis and a single bowed axial stacking axis orthogonal thereto, and a suction side bowed along a trailing edge adjacent a root for reducing flow separation thereat.

US 6,331,101 B2

TWO-CYLINDER PUMP

Shawn Leu, Newton, and Jeffrey W. Bergner, Cedar Grove, both of Wis., assignors to Thomas Industries Inc., Sheboygan, Wis.

Continuation of application No. 09/537,702, filed on Mar. 28, 2000, now Pat. No. 6,227,821, which is a continuation of application No. 09/199,123, filed on Nov. 24, 1998, now Pat. No. 6,056,521, which is a continuation-in-part of application No. 08/671,849, filed on Jun. 28, 1996, now abandoned. This application Mar. 21, 2001, Appl. No. 813,676.
Int. Cl. F04B *17/00;23/04*
U.S. Cl. 417—423.14 **7 Claims**



1. In a pump comprising at least two separate cylinder housings, each cylinder housing defining a cylinder with an axis, the axes being parallel and spaced apart; a pair of pistons, each piston being reciprocable in a corresponding one of the cylinders so as to reciprocate along the axis of the corresponding cylinder to vary a working volume of the cylinder; a motor positioned between the cylinder housings and driving the pistons so as to reciprocate the pistons; a head including a pair of head members, each head member being fastened to a different one of the cylinder housings; and said bead including at least one tube spanning the bead members, wherein the tube provides fluid communication between the head members; the improvement wherein:

the motor is fixed between the cylinder housings without fasteners joining the motor to the cylinder housings, said motor being contained within a motor sleeve which is between said cylinder housings, and wherein said head holds said cylinder housings against said motor sleeve.

US 6,331,102 B1
SCROLL TYPE FLUID MACHINERY

Makoto Takeuchi, and Kou Tanaka, both of Nagoya, Japan, assignors to Mitsubishi Heavy Industries, Ltd., Tokyo, Japan

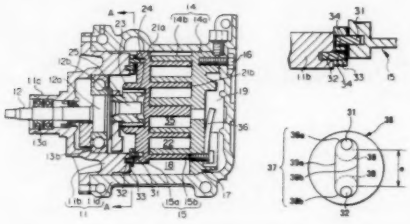
PCT No. PCT/JP99/06879, § 371 Date Aug. 9, 2000, § 102(e) Date Aug. 9, 2000, PCT Pub. No. WO00/34660, PCT Pub. Date Jun. 15, 2000

PCT Filed Dec. 8, 1999, Appl. No. 600,865

Claims priority, application Japan, Dec. 9, 1998, 10-350262; Jul. 16, 1999, 11-203922

Int. Cl. F01C *1/02*

U.S. Cl. 418—55.3 **16 Claims**



1. A scroll type fluid machine comprising a stationary scroll and a swivelling scroll each containing an involute wrap at a first end surface of an end plate in a standing state, wherein the stationary scroll and the swiveling scroll are mutually decentered, their phases are shifted, shifted scrolls are engaged with each other, and engaged scrolls are arranged in a housing, and the swiveling scroll performs a revolution swivel movement about the stationary scroll engaged in the housing; comprising a mechanism preventing rotation having:

a swivel side pin projecting from a second end surface of the end plate of the swiveling scroll,

a stationary side pin projecting from the housing to the second end surface side, and

a pin engaging member having means for receiving the swivel side pin and the stationary side pin including a sliding contact portion that allows sliding radial variation between the swivel side pin and the stationary side pin and controls maximum variation.

7. A scroll type fluid machine comprising a stationary scroll and a swivelling scroll each containing an involute wrap at a first end surface of an end plate in a standing state, wherein the stationary scroll and the swiveling scroll are mutually decentered, their phases are shifted, shifted scrolls are engaged with each other, and engaged scrolls are arranged in a housing, and the swiveling scroll performs a revolution swivel movement about the stationary scroll engaged in the housing; comprising a mechanism preventing rotation having:

a swivel side pin projecting from a second end surface of the end plate of the swiveling scroll,

a stationary side pin projecting from the housing to the second end surface side,

a pin engaging member sliding these swivel side pin and stationary side pin at sliding contact portion with admitting radial variation and controlling maximum variation,

wherein the pin engaging member comprises holes in which each of the swivel side pin and the stationary side pin are engaged with free movement and inner surfaces of the holes are defined as the sliding contact portions, and

wherein the pin engaging member is formed to be narrow along the line drawn through the swivel side pin and stationary side pin engaged with an interval with free movement.

US 6,331,103 B1
FLUID MACHINE HAVING A PAIR OF ROTORS AND A SILENCER

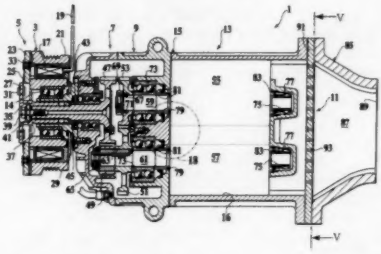
Masao Teraoka, Tochigi, Japan, assignor to Tochigi Fuji Sangyo Kabushiki Kaisha, Japan

Filed Apr. 29, 1999, Appl. No. 301,791

Claims priority, application Japan, Apr. 30, 1998, 10-121172

Int. Cl. F01C *1/16;21/00;* **F04C** *29/06*

U.S. Cl. 418—181 **9 Claims**



1. A fluid machine, comprising:

a casing having an operating chamber provided therein;

a pair of rotors rotatable mounted in the operating chamber, each rotor having a rotor shaft in each axial direction;

an intake casing having an intake opening for fluid and surrounding an existing space;

a silencing means provided on at least one end of the intake casing;

wherein the existing space is located between the intake opening and the operating chamber;

wherein the silencing means is composed of a plate member and at least one orifice which is formed in the plate member; and

wherein the plate member extends across the existing space of the intake casing.

US 6,331,104 B1
CONTINUOUS FOOD PROCESSING SYSTEM

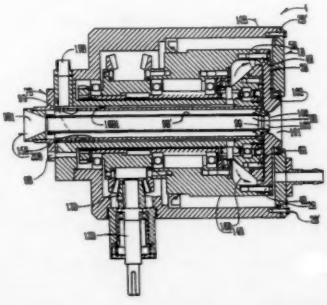
Petrus Johannes Kobussen, Veghel, Netherlands; Josinus Johannes Jacobus Petrus Kobussen, Bobbit, N.C.; Martinus Wilhelmus Hendricus Kobussen, Veghel, and Hendricus Franciscus Gerardus Smulders, Eindhoven, both of Netherlands, assignors to Townsend Engineering Company, Des Moines, Iowa

Continuation of application No. 08/722,163, filed as application No. PCT/US94/11474, filed on Oct. 11, 1994, now Pat. No. 5,759,602. This application Feb. 9, 1998, Appl. No. 363,269.

Claims priority, application Netherlands, Apr. 15, 1994, 9400602

Int. Cl. A23C *13/02;* **B29C** *47/02*

U.S. Cl. 425—133.1 **2 Claims**



1. An extruder for a coated edible strand of food product, comprising,

a housing having a longitudinal center bore defined by the inner diameter of an elongated center tube having inlet and outlet ends,

an elongated hollow dual extruder tube extending through the center bore and having an outer diameter less than an inner diameter of the center tube to create a space therebetween along the substantial length of the hollow dual extruder tube to create therebetween a first elongated material passageway,

a material inlet port in the housing adjacent the inlet end of the elongated center tube and being connected to the first elongated material passageway for introducing a first material into the first elongated material passageway,

a hollow extrusion horn having inner and outer diameters mounted in and extending longitudinally through the hollow dual extruder tube along the substantial length thereof and having an outer diameter less than an inner diameter of the hollow dual extruder tube to create a space therebetween,

the extrusion horn having inlet and outlet ends adjacent the inlet and outlet ends, respectively, of the center tube,

the hollow dual extruder tube being selectively slidably and detachably mounted in the center bore of the housing to permit it to be slidably inserted into and removed from the center bore,

means on the hollow dual extruder tube for selectively fixedly mounting the hollow dual extruder tube and the extrusion horn within the center bore of the housing,

an inner planar plate rotatably mounted in the housing on the center tube adjacent the outlet end thereof and extending around an outlet end of the hollow dual extruder tube,

an outside planar plate rotatably mounted adjacent to the first inner planar plate to create a narrow passageway connected to the first material passageway, the narrow passageway terminating in an orifice coextensive with the outlet end of the extrusion horn,

the outside planar plate rotatably mounted in the housing and forming the orifice of the narrow passageway adjacent to the outlet end of the extrusion horn to direct material flowing from the narrow passageway to be directed in a tangential direction parallel to an inner diameter surface of the extrusion horn to immediately deposit material from the narrow passageway to the surface of a sausage strand material as it is being discharged from the outlet end of the extrusion horn,

means associated with the housing for rotating the inner and outer planar plates in opposite directions,

the inner and outer planar plates being detachably secured to the housing for detachment therefrom and for the replacement thereof for substitute inner and outer planar plates to create a substitute narrow passageway to service a substitute hollow dual extruder tube having a diameter different than the extrusion horn mounted in the hollow dual extruder tube.

US 6,331,105 B1

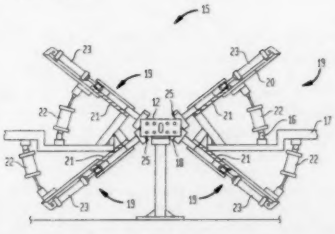
APPARATUS TO MANUFACTURE GREEN BRICKS

Barry W. Lee, New South Wales, Australia, assignor to Boral Bricks (NSW) Pty. Ltd.

Continuation-in-part of application No. 09/075,164, filed on May 8, 1998, now abandoned. This application Jul. 13, 2000, Appl. No. 615,174.

Int. Cl. B28B *11/08*

U.S. Cl. 425—324.1 **11 Claims**



1. An apparatus to receive a slug from which "green" bricks are formed, the slug being elongated and having a rectangular transverse cross section so as to provide two longitudinal side faces, an exposed top face, and a bottom face, said top and bottom faces and each side face forming an edge, said apparatus being adapted to deform the slug and having:

an elongated base to receive the slug so that the slug extends longitudinally thereof; and

at least two deformation members mounted adjacent the base and movable transversely of the base between a retracted position in which each of said deformation members is spaced from the slug, and a deformation position in which at least portions of each of said deformation members are engaged with the slug at spaced locations along at least one of the edges of the slug to cause irregular plastic deformations,

at least one first ram member for causing angular movement of at least one of said deformation members about the longitudinal direction of the base; and

a second ram member for causing reciprocation of each of said deformation members between said deformation position and said retracted position.

US 6,331,106 B1

INSULATED SPRUE BUSHING

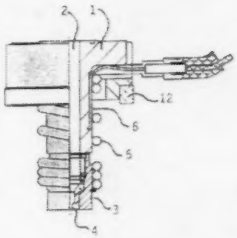
Carl E. Helldin, Skara, Sweden, assignor to Nils Helldin AB, Skara, Sweden

Filed Dec. 4, 1998, Appl. No. 205,764

Claims priority, application Sweden, Dec. 5, 1997, 9704540

Int. Cl. B29C *45/20*

U.S. Cl. 425—549 **17 Claims**



1. A device useful for injection molding of thermoplastic material, comprising:

a sprue bushing defining an outlet opening which is also adapted to be an inlet opening of a mold cavity;

a ceramic bushing having defined therein a flow channel for thermoplastic material, wherein the ceramic bushing is arranged at the outlet opening of the sprue bushing, and is adapted to insulate the thermoplastic material in the flow channel and to reduce dissipation of heat from the ther. oplastic material.

US 6,331,107 B1

COMBUSTION PROCESS AND APPARATUS THEREFORE CONTAINING SEPARATE INJECTION OF FUEL AND OXIDANT STREAMS

Louis C. Philippe, Oakbrook Terrace, Ill., assignor to American Air Liquide, Inc., Walnut Creek, Calif.

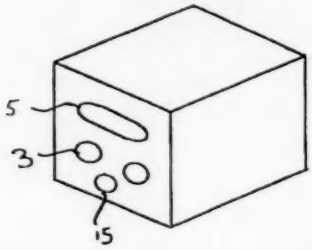
Continuation of application No. 09/211,603, filed on Dec. 14, 1998, now Pat. No. 6,074,197, which is a continuation of application No. 08/756,126, filed on Nov. 25, 1996, now Pat. No. 5,975,886. This application Apr. 13, 2000, Appl. No. 548,506.

This patent is subject to a terminal disclaimer.

Int. Cl. F27B *3/00;* **F23C** *5/00;3/02;* **F23D** *14/84*

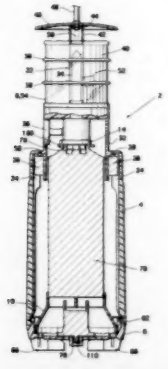
U.S. Cl. 431—285 **11 Claims**

1. A burner apparatus for combustion of a fuel in a combustion chamber of a furnace, the fuel being either a gaseous fuel or a liquid fuel, with oxygen contained in an oxidant gas, comprising cavity at least two means for distributing said gaseous fuel in at



least two adjacent streams injected in the combustion chamber of the furnace, each cavity for injecting said gaseous fuel having a gaseous fuel outlet, and cavity means for injecting liquid fuel, said cavity means for injecting liquid fuel having a liquid fuel outlet, and at least one main oxidant cavity ending with an elongated orifice having an a major axis along its largest dimension that is generally parallel to a surface to be heated, the elongated orifice suitable for injecting a major portion of oxidant required for complete combustion of the fuel, where in the elongated orifice directs the major portion of oxidant to converge toward the gaseous or liquid fuel streams in order to generate a broad flame substantially parallel to a surface to be heated, the liquid fuel outlet positioned a distance from the elongated orifice that exceeds a distance between the elongated orifice and the gaseous fuel outlets, and wherein the inner geometry of the main oxidant cavity comprises four sections: a first section that is generally cylindrical and having an axis; a second section that is generally cylindrical, of the same diameter as the first section; the second section making an angle (B) with the axis of the first section; continuously attached to second section is a third section, generally conical with a diverging angle (C) ranging from about 10° to about 120°; and a fourth section connecting continuously the third section with the elongated orifice.

US 6,331,108 B1
CONVERTIBLE GAS-BURNING APPLIANCE
Roy E. Stiner, Owasso, Okla., assignor to Brunswick Corporation, Lake Forest, Ill.
Filed Oct. 18, 1999, Appl. No. 419,581
Int. Cl. F21L *9/00*
U.S. Cl. 431—344 **15 Claims**



1. An apparatus adaptable for holding, and burning gas fuels from, different containers, said different containers including at least a first container and a second container and said apparatus comprising:

a housing sized such that each of said different containers is removably receivable in said housing, each of said different containers having an operating position in said housing, said operating position of said first container being different from said operating position of said second container;

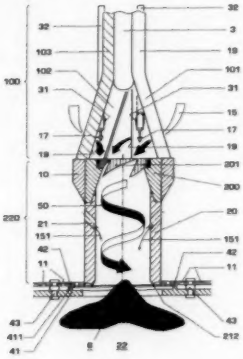
burning means for burning gas fuel from said containers; and

elevating means, positionable in said housing, for elevating and retaining said first container in said housing in its said operating position,

wherein said elevating means being removable from said housing for placing said second container in said housing in its said operating position, and

when none of said different containers are positioned in said housing, said elevating means can be placed in said housing and said burning means can be retracted into said housing for storing said elevating means and said burning means in said housing.

US 6,331,109 B1
PREMIX BURNER
Bettina Paikert, Oberrohrdorf; Christian Steinbach, Neuenhof; Richard Straessle, Aarau, all of Switzerland, and Dieter Winkler, Lauchringen, Germany, assignors to Alstom (Switzerland) Ltd., Baden, Switzerland
Filed Jul. 24, 2000, Appl. No. 624,258
Claims priority, application European Pat. Off., Jul. 22, 1999, 99114376
Int. Cl. F23D *14/46*
U.S. Cl. 431—350 **44 Claims**



1. A premix burner comprising:

an axial throughflow direction, an upstream end, and a downstream end,

a swirl generator for swirling a gaseous oxidizing medium;

means for injecting at least one fuel into a swirl flow when generated by the swirl generator, the oxidizing medium flowing through the swirl generator into the premix burner when swirled by the swirl generator, said swirl generaior having an axial throughflow direction, the swirl generator including and enclosing a cavity and having at least one tangential slit which runs in the axial throughflow direction and through which the oxidizing medium can flow in a tangential direction into the cavity, said cavity having a throughflow cross section, the cross-sectional area of said cavity at least partly increases toward the downstream end of the swirl generator;

a carrier structure;

a sudden cross-sectional increase at the downstream end of the premix burner, the premix burner being fastened at the downstream end of the premix burner to the carrier structure;

a heat shield arranged downstream of the carrier structure and fastened to the carrier structure so that there is no direct contact between the carrier structure and the heat shield and there is a distance between the carrier structure and the heat shield;

fastening means by which the heat shield is fastened to the carrier structure for ensuring relative displaceability between the heat shield and the carrier structure;

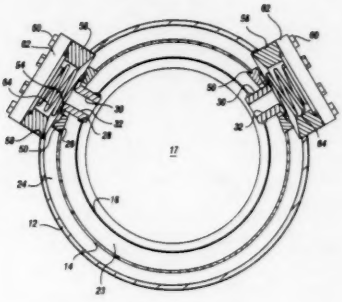
a displacement body in the cavity, the displacement body narrowing, at least in stages, toward the downstream end of the burner.

US 6,331,110 B1

EXTERNAL DILUTION AIR TUNING FOR DRY LOW NO_x COMBUSTORS AND METHODS THEREFOR

Charles Evan Steber; Harmon Lindsay Morton, both of Simpsonville, and Jacob Tussey McLeroy, Greenville, all of S.C., assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 2000, Appl. No. 578,663
Int. Cl. F23D *14/48;* **F02C** *7/057*
U.S. Cl. 431—352 **15 Claims**



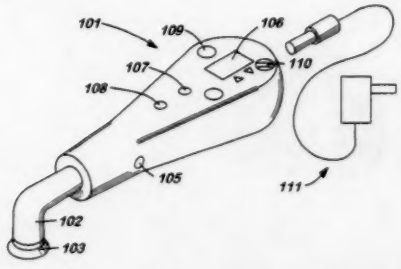
1. A combustor for a gas turbine comprising:
an outer casing;
a flow sleeve within said outer casing defining an air flow passage with said outer casing;
a combustion liner within said flow sleeve for flowing hot gases of combustion;
at least one opening in each said combustion liner and said flow sleeve;
a dilution sleeve removably received within said openings of said combustion liner and said flow sleeve; and
an access port in said outer casing for access to said dilution sleeve, said dilution sleeve being sized for passage through said access port enabling insertion into or removal of said dilution sleeve from said openings.

US 6,331,111 B1

CURING LIGHT SYSTEM USEFUL FOR CURING LIGHT ACTIVATED COMPOSITE MATERIALS

Densen Cao, Sandy, Utah, assignor to Cao Group, Inc., Sandy, Utah

Filed Sep. 24, 1999, Appl. No. 405,373
Int. Cl. A61C *1/00*
U.S. Cl. 433—29 **36 Claims**



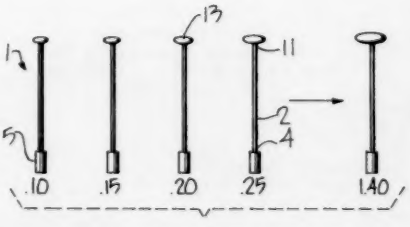
1. A portable curing light system useful for curing light activated composite materials, the portable curing light system comprising:
a light source, said light source including
a primary heat sink, said first heat sink being capable of drawing heat away from a light emitting diode,
at least one well located on said first heat sink, said well being sized and shaped to accommodate a light emitting diode therein,
an annular wall located in said well, said annular wall serving to reflect light in a desired direction,
a light emitting semiconductor chip located on said first heat sink in said well, said chip diode being adjacent to and firmly attached to said primary heat sink so that heat generated by said chip may be drawn away from it by said primary heat sink and conducted to said secondary heat sink from which it may be dissipated, said chip including a substrate selected from the group consisting of insulting substrates and conductive substrates,
a secondary heat sink attached to said first heat sink, said secondary heat sink having a larger volume than said first heat sink and serving to dissipate heat,
a light source housing including
a body located about the exterior of said light source, said body serving to contain said light source,
a light exit located on said body, said light exit being positioned so that light emitted by said light source can exit said housing and travel to a curing surface without first traveling through a light transport apparatus,
a cover covering said light exit, said cover permitting light emitted from said light source to pass through it and travel to a curing surface,
a flexible section on said body, said flexible section permitting bending articulation so that said light exit may be oriented toward a curing surface in order to direct light emitted by said light source to a curing surface, said flexible section comprising a soft protective material surrounding at least one bendable wire, and
a curing light housing, said curing light housing serving as a handle for a user of the curing light system to use to hold and manipulate the curing light,
a battery pack locatable within said housing, said battery pack serving to provide electrical power to said light source,
control circuitry located within said curing light housing, said control circuitry serving to control electrical operation of the curing light, and
an on and off switch, said on and off switch being located on said curing light housing, said on and off switch serving to selectively provide electrical power to said light source;
wherein light beams from said chip may exit said light source and travel directly to a curing surface without passing through a light transport apparatus.

US 6,331,112 B1

ENDODONTIC PROBE SYSTEM

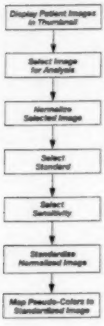
Charles Q. Lee, 8343 Acuff La., Lenexa, Kans. 66215

Filed Dec. 15, 2000, Appl. No. 738,820
Int. Cl. A61C *5/02*
U.S. Cl. 433—102 **8 Claims**



1. An endodontic measuring kit comprising:
a plurality of flexible rods for insertion as probes into an endodontic canal for determining the apical aperture diameter;
said rods having tip ends with diametrally enlarged end ball structures so that a user obtains a precise tactile sensation when passing the end ball structure through the apical aperture.

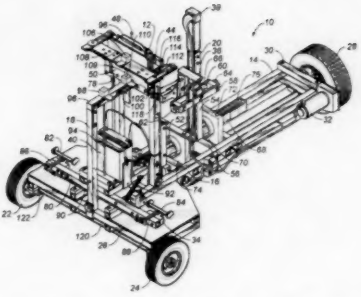
US 6,331,113 B1
AUTOMATED TOOTH SHADE ANALYSIS AND MATCHING SYSTEM
Alan C. Morris, Salt Lake City, Utah; Craig A. Mabrito, Bellaire, Tex., and Matthew R. Roberts, Idaho Falls, Id., assignors to D tech, L.L.C., Salt Lake City, Utah
Division of app..cation No. 09/234,585, filed on Jan. 21, 1999, now Pat. No. 6,190,170. This application Nov. 17, 2000, Appl. No. 715,273.
Int. Cl. A61C *5/00*
U.S. Cl. 433—215 **20 Claims**



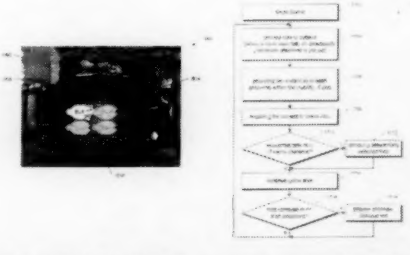
1. A method of whitening a patient's teeth, the method comprising:
acquiring a pre-whitening image of the patient's teeth containing first normalization references before whitening the patient's teeth;
normalizing said pre-whitening image in accordance with said first normalization references contained therein;
standardizing said normalized pre-whitening image by matching said normalized pre-whitening image to selected shade standards;
whitening the patient's teeth;
acquiring a post-whitening image of the patient's teeth containing second normalization references;
normalizing said post-whitening image in accordance with said second normalization references contained therein;
standardizing said normalized post-whitening image by matching said normalized post-whitening image to selected shade standards; and
comparing said standardized pre-whitening image with said standardized post-whitening image.

US 6,331,114 B1
APPARATUS FOR CONTROLLING A REMOTE CONTROLLED AIRPLANE
Fred Massey, #50 E. Rivercrest, Houston, Tex. 77042
Filed Aug. 23, 1999, Appl. No. 378,911
Int. Cl. G09B *9/08*
U.S. Cl. 434—32 **7 Claims**

1. An apparatus comprising:
a frame;
a remote control unit received within said frame, said remote control unit having a first joystick element and a second joystick element,
a joystick controller cantably mounted to said frame so as to have a forward/backward movement and a side-to-side movement,
a first linkage connected to said joystick controller and to said first joystick element of said remote control unit, said first linkage adapted to cause an up-and-down movement of said first joystick element relative to the forward/backward movement of said joystick controller, and
a second linkage connected to said joystick controller and to said first joystick element of said remote control unit, said second linkage adapted to cause a side-to-side movement of said first joystick element relative to the side-to-side movement of said joystick controller;
a foot receiving structure pivotally mounted to said frame so as to be pivotable about a central axis, said foot receiving structure comprising:
a bar;
a first pedal pivotally attached about a vertical axis to one end of said bar; and
a second pedal pivotally attached about a vertical axis to an opposite end of said bar, said first pedal connected to said second pedal such that a pivoting of one pedal causes a corresponding pivoting of the other pedal; and
a third linkage connected to second foot receiving structure and to said second joystick element, said third linkage adapted to cause a side-to-side movement of said second joystick element relative to a pivotal movement of said foot receiving structure.



US 6,331,115 B1
METHOD FOR ADAPTIVE TRAINING OF SHORT TERM MEMORY AND AUDITORY/VISUAL DISCRIMINATION WITHIN A COMPUTER GAME
William M. Jenkins, Pacifica; Michael M. Merzenich, San Francisco; Steven L. Miller, Pacifica; Bret E. Peterson, Lafayette, all of Calif., and Paula Tallal, Lumberville, Pa., assignors to Scientific Learning Corp., Oakland, Calif.
Continuation-in-part of application No. 08/982,189, filed on Dec. 17, 1997, now Pat. No. 5,927,988. This application Jun. 30, 1998, Appl. No. 106,939.
Int. Cl. G09B *5/00*
U.S. Cl. 434—169 **16 Claims**



1. A method for adaptively presenting auditory/visual stimulus sets to a human subject, to train the human subject to distinguish between similar sounding phonemes, and to associate graphemes with their corresponding phonemes, each of the stimulus sets having a plurality of phonemes, the method comprising:
a) providing a plurality titles to a human subject to be selected one at a time, the plurality of tiles when selected playing an acoustically processed phoneme from a stimulus set along with it's associated graphemes;

b) within the provided plurality of tiles, providing each acoustically processed phoneme within the stimulus set at least two times;

c) removing from the provided plurality of tiles, sequentially selected tiles that play the same acoustically processed phoneme; and

d) if all of the plurality of tiles are removed in less than or equal to a predetermined number of selections, providing an alternate stimulus set for presentation to the subject, via a second plurality of tiles.

US 6,331,116 B1

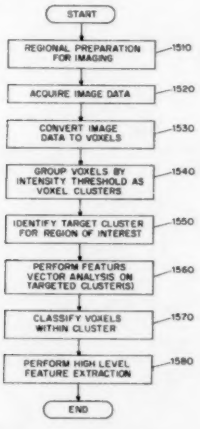
SYSTEM AND METHOD FOR PERFORMING A THREE-DIMENSIONAL VIRTUAL SEGMENTATION AND EXAMINATION

Arie E. Kaufman, Plainview; Zhengrong Liang, Stony Brook; Mark R. Wax, Greenlawn; Ming Wan, and Dongquing Chen, both of Stony Brook, all of N.Y., assignors to The Research Foundation of State University of New York, Stony Brook, N.Y.

Continuation-in-part of application No. 08/714,697, filed on Sep. 16, 1996, now Pat. No. 5,971,767, Provisional application No. 60/125,041, filed on Mar. 18, 1999. This application Jun. 29, 1999, Appl. No. 343,012.

Int. Cl. G09B *23/28*; **G06T** *1/00*

U.S. Cl. 434—262 **26 Claims**



1. A method for electronically cleansing a virtual object, formed from image data, comprising:

converting the image data to a plurality of volume elements forming the virtual object, each volume element having an intensity value;

classifying the volume elements into a plurality of clusters in accordance with the intensity values; and

removing at least one cluster of volume elements from the virtual object.

19. An imaging system including an image segmentation feature, comprising:

an imaging scanner for acquiring image data;

a processor, said processor converting the image data into a plurality of volume elements forming a volume element data set, each volume element having an intensity value, the processor performing an image segmentation operation on the volume element data set comprising classifying the volume elements into a plurality of clusters in accordance with the intensity values and removing at least one cluster of volume elements from the image data; and

a display unit operatively coupled to the processor for displaying a representation of the image data with the at least one cluster of volume elements removed.

US 6,331,117 B1

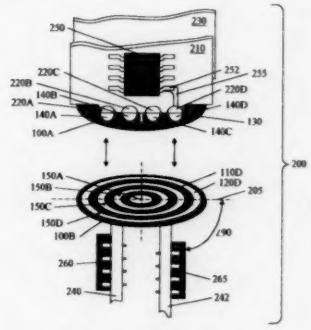
ELECTRICAL COMPONENT SYSTEM WITH ROTATABLE ELECTRICAL CONTACTS

Gary L. Brundage, 6680 Alhambra Ave., #504, Concord, Calif. 94553

Filed Jun. 5, 1998, Appl. No. 92,313

Int. Cl. H01R *39/00*

U.S. Cl. 439—21 **39 Claims**



16. A sensor system comprising:

a. a cylindrical housing having a first end and a threaded second end;

b. a sensor proximate to the first end of the housing;

c. a circuit component disposed within the housing and in electrical communication with the sensor, the circuit component including:

i. first and second conductive pads; and

ii. an integrated circuit;

d. an electrical connector including:

i. a threaded connector support rotatable attached to the threaded second end of the housing and having a channel adapted to receive a cable, wherein the cable includes first and second insulated wires;

ii. a wiring board attached to the connector support, the wiring board supporting first and second concentric conductors electrically connected to respective ones of the first and second insulated wires; and

iii. at least one resilient conductive member disposed against the first and second concentric conductors, the at least one resilient conductive member adapted to provide electrical contact between the first conductive pad and the first conductor and to provide electrical contact between the second conductive pad and the second conductor; and

iv. a second resilient member adapted to urge the wiring board toward the first and second conductive pads to compress the at least one resilient conductive member.

US 6,331,118 B1

ELECTRODE SPACING CONVERSION ADAPTOR

Hiroaki Ono, and Masanori Hirano, both of Kanazawa, Japan, assignors to Kabushiki Kaisha Linear Circuit, Kanazawa, Japan

Filed Jun. 17, 1999, Appl. No. 334,727

Claims priority, application Japan, Jun. 19, 1998, 10-173058

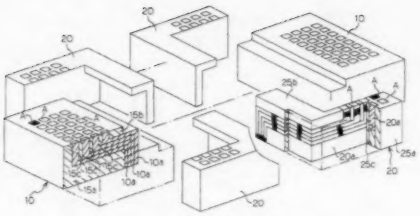
Int. Cl. H01R *4/58*

U.S. Cl. 439—91 **10 Claims**

10. An electrode spacing conversion adapter comprising:

a plurality of sheet elements having top and bottom electrodes arrayed at different intervals along upper and lower ends of each sheet element, respectively,

the top electrodes are individually connected to their corresponding bottom electrodes by conductors, and the individual sheet elements are angled in such a way that the upper portions carrying the top electrodes are stacked in the direc-



tion of the thickness of the sheet elements at intervals different from intervals at which the lower portions carrying the bottom electrodes are stacked,

wherein each of the sheet elements has an L-shape in top view, having a first vertical plane and a second vertical plane which is connected to one side end of the first plane; and

the top electrodes are carried by the first plane and the bottom electrodes are carried by the second plane.

US 6,331,119 B1

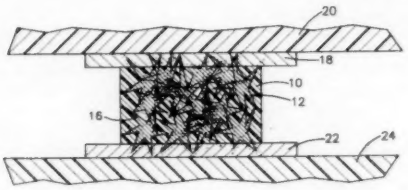
CONDUCTIVE ADHESIVE HAVING A PALLADIUM MATRIX INTERFACE BETWEEN TWO METAL SURFACES

William E. Bernier, Endwell, and Edward G. Bundga, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1999, Appl. No. 474,912

Int. Cl. H01R *4/58*

U.S. Cl. 439—91 **12 Claims**



1. An isotropic electrically conductive adhesive bonding two metal surfaces together comprising:

a. an adhesive interposed between two metal surfaces; and

b. a continuous metal matrix of interconnected dendritic particles having at least a palladium surface surrounded by said adhesive with said dielectric palladium particles penetrating adjacent particles and forming a structure which penetrates the metal surfaces.

US 6,331,120 B1

ELECTRICAL CONNECTOR WITH REDUCED CROSSTALK FOR HIGH FREQUENCY SIGNALS

Jean Yves Clement, St Jeannet, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 19, 2001, Appl. No. 811,928

Claims priority, application European Pat. Off., May 12, 2000, 00480044

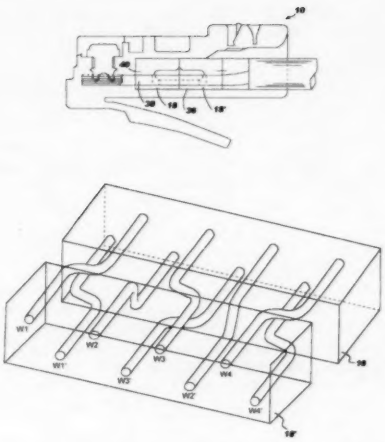
Int. Cl. H01R *4/24*

U.S. Cl. 439—418 **2 Claims**

1. An electrical connector for terminating a multi-wire cable that includes a plurality of wire pairs, the connector comprising:

a dielectric housing for accepting entry of the multi-wire cable and enclosing at least two management bars;

a first management bar within the housing, the first management bar having a first set of bores for receiving and positioning wire pairs of the multi-wire cable entering the housing; and



a second management bar within the housing, the second management bar having a second set of bores for receiving and positioning wire pairs that exit the first management bar;

wherein the first management bar positions a set of four wire pairs according to a pattern W1', W1, W2, W3, W3', W2', W4', W4, and the second management bar positions the same set of four wire pairs according to a pattern W1, W1', W2, W3', W3, W2', W4, W4'.

US 6,331,121 B1

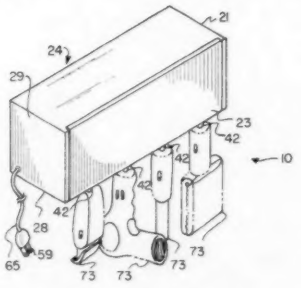
APPARATUS FOR ARRANGING ELECTRICAL CORDS

James E. Raeford, Sr., P.O. Box 571, Davidson, N.C. 28036

Filed May 12, 2000, Appl. No. 569,457

Int. Cl. H01R *13/72*

U.S. Cl. 439—501 **18 Claims**



1. An apparatus for receiving and storing the cords of multiple electrical devices in a manner permitting use of the electrical devices without removing the cords from the apparatus, the apparatus comprising:

a housing having an interior;

a shaft mounted in the interior of the housing;

at least one cord reeling assembly for removably and windably receiving a cord of an electrical device positioned outside the interior of the housing, the cord reeling assembly being mounted in the interior of the housing, each cord reeling assembly comprising:

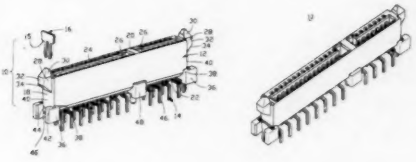
a cord spool rotatably mounted on the shaft, the cord spool having a central portion and a pair of spaced flange portions extending outward from ends of the central portion; and

an electrical power supply system for supplying electrical power to an electrical device having a cord wound about the cord spool;

wherein the housing has a rear wall adapted for mounting to a vertical wall for supporting the housing;

wherein the housing has a bottom wall extending outwardly from the rear wall, the bottom wall having at least one cord aperture therethrough, the at least one cord aperture being located below the cord spool for permitting the cord wrapped about the cord spool to depend downwardly from the cord spool such that the electrical device on the cord is suspended below the bottom wall of the housing and the cord is dispensable from the housing by pulling downwardly on the electrical device.

US 6,331,122 B1
ELECTRICAL CONNECTOR HAVING A REDUCED LONGITUDINAL DIMENSION
Jerry Wu, Pan-Chiao, Taiwan, assignor to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan
Filed Jul. 16, 2001, Appl. No. 907,098
Int. Cl. H01R *13/60*
U.S. Cl. 439—567 **15 Claims**



1. An electrical connector comprising:

an elongated insulative housing having a mating surface, a mounting surface and a pair of opposite side faces, the housing including a block protruding outwardly from one of the side faces in a longitudinal direction of the housing;

a plurality of conductive contacts received in the housing; a fastener fixed to the housing and located under the block inwardly of a plane defined by an outermost surface of said block;

wherein the block serves as a guiding post for guiding the connector to a mating connector;

wherein the housing includes a retention portion to which said fastener is fixed, a space being defined between the block and the retention portion; and

wherein the retention portion includes two pieces spaced from each other in a transverse direction of the housing between which the fastener is sandwiched.

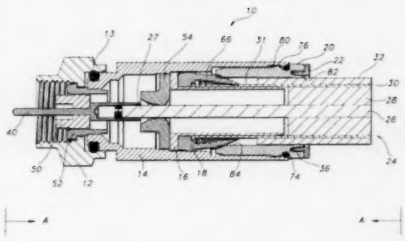
US 6,331,123 B1
CONNECTOR FOR HARD-LINE COAXIAL CABLE
Julio F. Rodrigues, Collier, Tenn., assignor to Thomas & Betts International, Inc., Sparks, Nev.
Continuation of application No. 09/716,667, filed on Nov. 20, 2000. This application Jul. 11, 2001, Appl. No. 902,994.
Int. Cl. H01R *9/05*
U.S. Cl. 439—584 **31 Claims**

1. An environmentally-sealed, quick connect connector for use with a hard-line coaxial cable comprising:

an elongate post having a cylindrical wall with a proximal portion and a distal portion, the distal portion having an outer surface adapted to abuttingly engage an inner surface of an outer conductor of the hard-line coaxial cable;

a cylindrical ferrule having a proximal portion and a distal portion, the distal portion having a plurality of parted fingers having an inner surface adapted to abuttingly engage an outer surface of the outer conductor of the hard-line coaxial cable and a sloped outer surface;

a elongate cylindrical collar having a proximal end for securably holding the post and the ferrule and a distal open end;

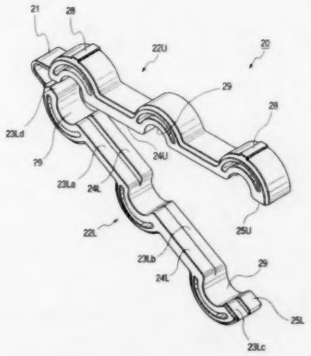


a cylindrical sleeve having a proximal portion slidably engaging the sloped surface of the ferrule and a distal portion and having circumferential slot at the end thereof; and

a seal ring adapted for slidingly insertion into the slot of the sleeve;

wherein upon the slidably insertion of the seal ring into the sleeve and the sleeve at the distal end of the collar, the proximal portion of the sleeve compresses the ferrule fingers radially inward to secure the inner surface of the fingers to the outer surface of the conductor and further wherein the seal ring radially inwardly compresses the distal portion of the sleeve onto an outer surface of a cable jacket which surrounds the outer conductor of the coaxial cable to provide an environmental seal thereat.

US 6,331,124 B1
WATERPROOF CONNECTOR
Sho Miyazaki, and Tetsuo Ichioka, both of Nagoya, Japan, assignors to Autonetworks Technologies Ltd., Nagoya; Sumitomo Wiring Systems, Ltd., Yokkaichi, and Sumitomo Electric Industries, Ltd., Osaka, all of Japan
Filed Aug. 23, 2000, Appl. No. 643,732
Claims priority, application Japan, Aug. 23, 1999, 11-235983
Int. Cl. H01R *13/52*
U.S. Cl. 439—587 **4 Claims**



1. A waterproof connector comprising:

a housing defining a plurality of cavities each having a terminal inserting port;

a plurality of terminal metal fittings secured to a plurality of electric wires respectively and inserted into the plurality of cavities respectively;

a plurality of rubber caps through which the plurality of electric wires are watertightly inserted respectively, the plurality of rubber caps fitted in the terminal inserting ports of the cavities respectively; and

a retainer fitted to the housing for restricting the disengagement of the rubber caps, the retainer comprises a pair of a first and

second half members connected to each other by a hinge to be removable from each other,

wherein each of the first and second half members has a plurality of concave portions on an abutment surface of the half members for avoiding interference with the electric wires;

the retainer retains the rubber caps in such manner that the retainer is fitted to the housing in a state in which the first and second half members are combined, to restrict the disengagement of the rubber caps; and

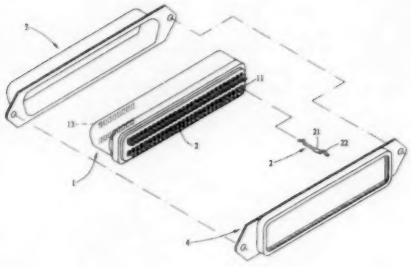
each of the first and second half members has a restricting portion, and the restricting portion of the first half member is retained in the restricting portion of the second half member to restrict relative displacement of the first and second half members in a direction along with the abutment surfaces of the first and second half members.

US 6,331,125 B1

STRUCTURE OF A CONNECTOR FOR COMPUTER PERIPHERAL DEVICES

Liken Lin, 35 Chung Yang Rd., Sec. 4, Tu-Cheng, Taipei Hsien, Taiwan

Filed Mar. 2, 2000, Appl. No. 517,723
Int. Cl. H01R *13/64*
U.S. Cl. 439—660 **3 Claims**



1. A connector for a peripheral device comprising:

a housing;

a front side of said housing having a plurality of equally spaced front holes;

a rear side of said housing having a plurality of equally spaced longitudinally passages for insertion of terminals, each said plurality of equally spaced longitudinal passages corresponding to one of said plurality of equally spaced front holes, and each of said plurality of equally spaced longitudinal passages being larger in width than the corresponding front hole; and

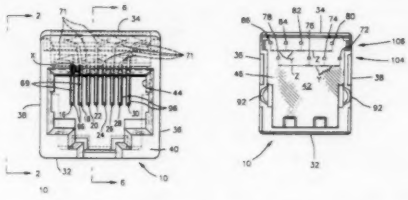
a plurality of terminals for inserting into the corresponding one of said plurality of equally spaced longitudinal passages, each of said plurality of terminals having a front V-shaped part, a rear curved leg and an enlarged body portion, said front part and rear leg being equal in width, said enlarged body portion of said terminal and said longitudinal passage being equal in width for mounting into each of the passages with said front V-shaped part entering said passage and extending to said front hole, said enlarged body portion completely and snuggly fitting in said corresponding passage, and said rear curved leg extending rearwardly from the enlarged body portion for connecting to the rear side of the housing, and only said rear curved leg being exposed outside the housing.

US 6,331,126 B1

HIGH SPEED MODULAR JACK

Justin S. Wagner, York, Pa., assignor to Sentinel Holding, Inc., York, Pa.

Filed Sep. 7, 2000, Appl. No. 656,893
Int. Cl. H01R *24/00*
U.S. Cl. 439—676 **24 Claims**



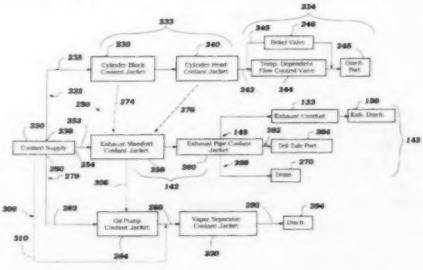
1. A high speed, low cross talk modular jack including a body formed from dielectric material, said body defining a plug recess and including a bottom wall, opposed side walls and a contact support member extending above the bottom wall and along one side of the plug recess; and a plurality of wire contacts in the body, each wire contact including a cantilever end at the top of the support member and extending into the plug recess, a pin extending below the bottom wall and an intermediate portion joining the cantilever end and the pin, adjacent cantilever ends spaced apart a distance X along the support member, said pins being arranged in two spaced, staggered rows with each row including two adjacent pins spaced apart a distance Y and an end pin spaced from one of the adjacent pins a distance Z, the distance X being less that the distance Y and the distance Y being less than the distance Z, said end pins being located adjacent said opposite side walls, said adjacent pins in one row being located between the end pin and the nearest adjacent pin in the other row.

US 6,331,127 B1

MARINE ENGINE

Akitaka Suzuki, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

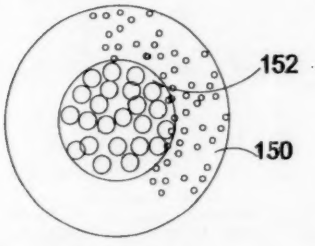
Filed Feb. 8, 2000, Appl. No. 499,982
Int. Cl. B63H *21/38*
U.S. Cl. 440—88 **18 Claims**



1. A watercraft comprising a propulsion system including an engine, the engine having a body defining at least one combustion chamber therein and having at least one coolant jacket therein, an exhaust conduit communicating with the at least one combustion chamber and extending to an exhaust discharge arranged to discharge exhaust gases from the at least one combustion chamber through the exhaust conduit and to the atmosphere, the exhaust conduit having a coolant jacket in thermal communication with at least a portion thereof, a coolant supply configured to generate pressurized coolant, a cooling system defining a first coolant flow path extending from the coolant supply, in a downstream direction, through the engine coolant jacket, through a temperature depen-

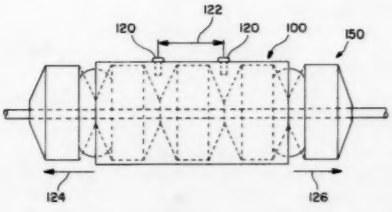
dent flow control valve, and to the atmosphere, a second coolant flow path having an inlet end connected to at least one of the coolant supply and a portion of the first coolant flow path upstream of the temperature dependent flow control valve, the second coolant flow path communicating with the exhaust conduit coolant jacket and discharging coolant to the atmosphere, the second coolant flow path not being connected to any portion of the first coolant flow path downstream of the temperature dependent control valve.

US 6,331,128 B1
FLEXIBLE CORE RECREATIONAL DEVICE
Christie Liscomb Schmick, 10082 Hatton Ferry Rd., Scottsville, Va. 24590
Filed Oct. 26, 1999, Appl. No. 427,422
Int. Cl. B63B *35/73*
U.S. Cl. 441—129 **20 Claims**



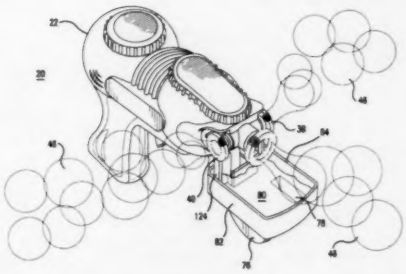
1. A recreational device comprising:
an outer surface, said outer surface being moisture impermeable, semi-flexible, tear resistant, and UV resistant; and
at least one core, at least a portion of said at least one core being a moisture impermeable, flexible, resilient closed cell foam having a first density;
wherein said core is capable of supporting the weight of an entire body upon a floatable or slidable surface.

US 6,331,129 B1
DEVICE FOR MARKING SWIMMING POOL LANE DIVIDERS
William L. Earley, 475 C Ave., Coronado, Calif. 92118
Provisional application No. 60/149,231, filed on Aug. 16, 1999.
This application Aug. 16, 2000, Appl. No. 641,420.
Int. Cl. B63B *22/00*
U.S. Cl. 441—133 **15 Claims**



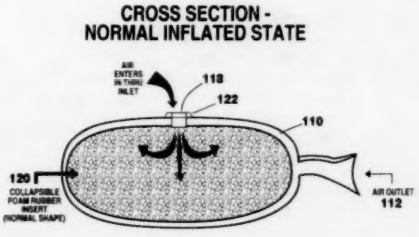
1. A marker for swimming pool lane dividers having sections at least partially separated from each other by a space, said marker comprising:
a flexible sheet having a top edge and a bottom edge; and
a fastener for fastening said top edge to said bottom edge wherein said flexible sheet forms a cylindrical cover around said swimming pool lane divider;
wherein a portion of said fastener extends through said flexible sheet and into said space separating said sections.

US 6,331,130 B1
BUBBLE GENERATING ASSEMBLIES
Douglas Thai, 19907 Tennessee Trail, Walnut, Calif. 91789
Filed Jan. 3, 2000, Appl. No. 476,864
Int. Cl. A63H *33/00*
U.S. Cl. 446—15 **21 Claims**



1. A bubble generating assembly, comprising:
an air generator;
a bubble producing device positioned in front of the air generator to receive air generated from the air generator;
a liquid generator;
a nozzle spaced apart from the bubble producing device and coupled to the liquid generator for ejecting a stream of liquid in a direction other than below the bubble generating assembly; and
an actuator operatively coupled to the liquid generator and the air generator for simultaneously actuating the liquid generator and the air generator.

US 6,331,131 B1
SELF INFLATING NOISE MAKER
Russell Morris Selevan, Jacksonville, Fla., assignor to Ja-Ru, Inc., Jacksonville, Fla.
Provisional application No. 60/184,610, filed on Feb. 24, 2000.
This application May 9, 2000, Appl. No. 568,184.
Int. Cl. A63H *3/06*
U.S. Cl. 446—220 **9 Claims**



1. A noise maker comprising:
a membrane being enclosed to define a collapsible container,
said membrane having an inlet and an outlet, said outlet being formed by flat flexible pieces joined together defining a passage therein,
said collapsible container being filled with a compressible porous material.

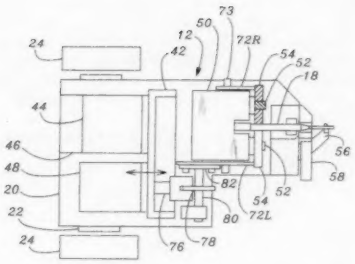
wherein said outlet produces a sound when said container is compressed.

US 6,331,132 B1
YO-YO HAVING IMPROVED TETHER TENSION CONTROL AND ADJUSTABLE MECHANISM
Donald W. Watson, Rohnert Park, Calif., assignor to What's Next Manufacturing, Inc., Arcade, N.Y.
Filed Jul. 27, 1999, Appl. No. 361,650
Int. Cl. A63H *1/30*
U.S. Cl. 446—250 **26 Claims**

1. An improved yo-yo, comprising:
a first yo having a first inwardly facing surface;
a second yo having a second inwardly facing surface, said second yo arranged in spaced apart relation to said first yo, where said first and second inwardly facing surfaces face one another;
an axle secured to and arranged between said first yo and said second yo, where said first and second yos are arranged for rotation about an imaginary axis coincident with said axle; and,
a first fibrous pad secured to said first inwardly facing surface.
12. An improved yo-yo, comprising:
a first yo having a first inwardly facing surface;
a second yo having a second inwardly facing surface, said second yo arranged in spaced apart relation to said first yo, creating a gap having a length between said first and second inwardly facing surfaces;
an axle having a first end and a second end, said first end adjustably secured within a partial through-bore in said first yo, said second end fixedly secured within a partial through-bore in said second yo, where said first and second yos are arranged for rotation about an imaginary axis coincident with said axle;
a greaseless ball bearing mounted on said axle; and,
a ratchet assembly operatively arranged to change the length of said gap in response to rotation of said first yo relative to said second yo.

US 6,331,133 B1
AUTOMATIC DRILL BIT RE-POINTING APPARATUS AND METHOD
Ichiro Katayama, Tokyo; Yoshinobu Watanabe, Nagaoka; Yuichi Nakajima, Nagaoka, and Yoshiharu Shinbo, Nagaoka, all of Japan, assignors to Union Tool Company, Tokyo, Japan
Filed Oct. 5, 1998, Appl. No. 166,767
Claims priority, application Japan, Oct. 6, 1997, 9-289131
Int. Cl. B24B *49/00*
U.S. Cl. 451—9 **29 Claims**

1. An apparatus for sharpening twist drill bits comprises,
a. a drill bit holder mechanism including,
i. a front fluted portion holder structure adapted to support the fluted front portion of a drill bit, said structure including height adjustment actuator means effective in pivoting said drill bit to thereby position its tip at a pre-determined height,
ii. a rear, shank holder structure adapted to support the shank of said drill bit, said structure including phase angle actuator means for rotating said drill bit about its longitudinal axis to a particular orientation or phase angle of the cutting edges or lips of said fluted front portion of said drill bit relative to said structure,



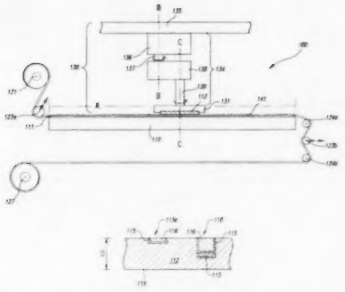
b. an optical alignment apparatus located at a first, load/unload/align station position relative to said drill bit holder mechanism, said optical alignment apparatus adapted to measure the spatial position of said tip of said drill bit relative to said first station position, and
c. station actuator means for moving said drill bit holder mechanism from said first station to a second, grinding station.

US 6,331,134 B1
COMPOSITION AND METHOD FOR POLISHING IN METAL CMP
Vikas Sachan, Hockessin; Elizabeth A. (Kegerise) Langlois, Newark; Qianqiu (Christine) Ye, Wilmington, all of Del.; Keith G. Pierce, Colorado Springs, Colo.; Craig D. Lack, Wilmington; Terence M. Thomas, Newark, both of Del.; Peter A. Burke, Avondale, Pa.; David Gettman, Bear, Del., and Sarah Lane, Elkton, Md., assignors to Rodel Holdings Inc., Wilmington, Del.
Provisional application No. 60/088,849, filed on Jun. 10, 1998. This application Jun. 10, 1999, Appl. No. 329,225.
Int. Cl. B24B *1/00*
U.S. Cl. 451—41 **10 Claims**

6. A method for polishing by CMP, chemical/mechanical planarization, a semiconductor substrate having silicon dioxide underlying a layer of metal to be removed by CMP, the method comprising the steps of:
applying an abrasive aqueous solution to a polishing pad during relative movement between the substrate and the polishing pad, with the substrate and the polishing pad pressing against each other to remove the layer of metal,
oxidizing the metal with an oxidant in the aqueous solution to produce ions of the metal,
increasing solubility of the ions in the aqueous solution by complexing the ions with a complexing agent in the aqueous solution, and
inhibiting removal of the silicon dioxide by providing an organic polymer dissolved in the aqueous solution and bonding with silanol surface groups on the silicon dioxide during removal of the layer of metal.

US 6,331,135 B1
METHOD AND APPARATUS FOR MECHANICAL AND CHEMICAL-MECHANICAL PLANARIZATION OF MICROELECTRONIC SUBSTRATES WITH METAL COMPOUND ABRASIVES
Gundu M. Sabde, and Scott Meikle, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Aug. 31, 1999, Appl. No. 387,067
Int. Cl. B24B *5/00*
U.S. Cl. 451—41 **25 Claims**

1. A combination of a metal-containing substrate and a fixed abrasive polishing pad, comprising:



a microelectronic substrate having a feature with a first metal material having a first composition and a second metal material adjacent to the first metal material having a second composition different than the first composition;

a fixed abrasive polishing pad that includes a suspension medium having a planarizing surface for planarizing the microelectronic substrate; and

a plurality of abrasive elements distributed in the suspension medium proximate to the planarizing surface, the suspension medium and the abrasive elements together having a first removal rate of the first metal material when the suspension medium is engaged with the microelectronic substrate and at least one of the microelectronic substrate and the suspension medium is moved relative to the other, the suspension medium and the abrasive elements together having a second removal rate of the second metal material when the suspension medium body is engaged with the microelectronic substrate and at least one of the microelectronic substrate and the suspension medium is moved relative to the other, a ratio of the first removal rate to the second removal rate being less than or equal to approximately two.

US 6,331,136 B1

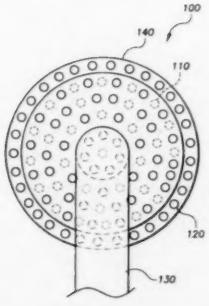
CMP PAD CONDITIONER ARRANGEMENT AND METHOD THEREFOR

Victor J. Bass, and Landon Vines, both of San Antonio, Tex., assignors to Koninklijke Philips Electronics N.V. (KPENV), Eindhoven, Netherlands

Filed Jan. 25, 2000, Appl. No. 490,466

Int. Cl. B24C *5/00*

U.S. Cl. 451—56 **28 Claims**



1. A CMP pad conditioner arrangement, comprising:

a fluid source adapted to supply cleaning elements at a pressure of at least about 20 PSI;

a dispensing arrangement coupled to the fluid source and adapted to disperse the cleaning elements and to dispense the cleaning elements onto a CMP pad; and

means, coupled to dispensing arrangement, for scrubbing while the dispensing arrangement disperses and dispenses the cleaning elements.

US 6,331,137 B1

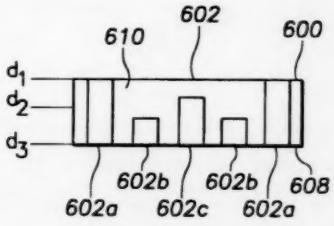
POLISHING PAD HAVING OPEN AREA WHICH VARIES WITH DISTANCE FROM INITIAL PAD SURFACE

Christopher H. Raeder, and Kevin Shipley, both of Austin, Tex., assignors to Advanced Micro Devices, Inc, Sunnyvale, Calif.

Filed Aug. 28, 1998, Appl. No. 143,046

Int. Cl. B24B *7/24*

U.S. Cl. 451—285 **23 Claims**



1. A polishing pad arrangement, comprising a pad having a horizontal polishing surface and a plurality of openings that define a horizontal cross-sectional open area of the pad, the horizontal cross-sectional open area being taken across the pad in a horizontal plane that is substantially parallel to the horizontal polishing surface, each of the plurality of openings having a substantially consistent horizontal cross-section throughout the opening, at least a portion of the horizontal cross-sectional open area of the pad increasing as the distance from the horizontal polishing surface at which the horizontal cross-sectional open area is taken increases, and wherein the plurality of openings include X openings located at a first depth measured from the horizontal polishing surface, and Y openings located at a second depth measured from the horizontal polishing surface, the first depth being less than the second depth, wherein the X openings have a combined horizontal cross-sectional open area that is less than a combined horizontal cross-sectional open area of the Y openings.

US 6,331,138 B1

GRINDING MACHINE

Gilbert Filipe Maria Witters, Mortsel, Belgium; Johannes Petrus Van Vliet, Alphen aan de Rijn, and Joop Henk Muller, Ter Aar, both of Netherlands, assignors to Holland Industriele Diamantwerken B.V., Netherlands, and Witcan N.V., Belgium

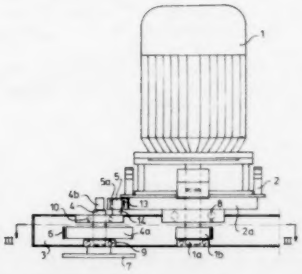
PCT No. PCT/NL98/00309, § 371 Date Apr. 10, 2000, § 102(e) Date Apr. 10, 2000, PCT Pub. No. WO98/53953, PCT Pub. Date Dec. 3, 1998

PCT Filed May 27, 1998, Appl. No. 424,887

Claims priority, application Netherlands, May 27, 1997, 1006141

Int. Cl. B24B *41/00*

U.S. Cl. 451—340 **8 Claims**



1. A grinding apparatus which comprises

(1) a rotary casing which includes a sun gear;

(2) a plurality of rotary disk holders, each of which is mounted on the casing and includes a disk holder shaft and a holder for a grinding disk;
(3) a drive shaft;
(4) a continuous flexible element which couples the drive shaft to the disk holders so that rotation of the drive shaft causes rotation of each of the disk holders; and
(5) at least one gear transmission which comprises (i) a disk holder shaft gear mounted on one of the disk holder shafts and (ii) a satellite gear which couples the disk holder shaft gear to the sun gear of the rotary casing so that rotation of the holder causes rotation of the frame.

US 6,331,139 B2

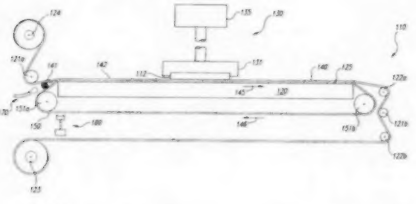
METHOD AND APPARATUS FOR SUPPORTING A POLISHING PAD DURING CHEMICAL-MECHANICAL PLANARIZATION OF MICROELECTRONIC SUBSTRATES

Michael A. Walker, Kuna, and Karl M. Robinson, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Division of application No. 09/387,065, filed on Aug. 31, 1999. This application Feb. 27, 2001, Appl. No. 795,283.

Int. Cl. B24D *17/00*

U.S. Cl. 451—490 **17 Claims**



1. A support pad for supporting a polishing pad of a web-format planarizing apparatus relative to a microelectronic substrate during planarization of the microelectronic substrates, the support pad comprising an elongated movable pad body having a first surface facing toward the polishing pad when the support pad is installed on the planarizing apparatus and a second surface facing opposite the first surface, the first surface including a first portion contacting the polishing pad and a second portion spaced apart from the polishing pad when the support pad is installed on the planarizing apparatus and the polishing pad moves relative to the support pad, and a platen attached to the pad body, the platen further comprising an elongated flexible sheet that is generally incompressible in a direction generally perpendicular to at least one of the first and second surfaces of the pad body.

US 6,331,140 B1

MOBILE GENETIC ELEMENTS AS TOOLS FOR GENETIC MODIFICATION OF *L. DELBRUECKII* OR *L. HELVETICUS*

Beat Mollet, Lausanne; Jacques Edouard Germond, Crissier, and Luciane Lapierre, Attalens, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Jun. 17, 1999, Appl. No. 334,938

Claims priority, application European Pat. Off., Jun. 17, 1998, 98202028

Int. Cl. C12N *15/74;15/00;1/20;* **C12Q** *1/02*

U.S. Cl. 453—476 **8 Claims**

1. A method of using an insertion sequence element as a tool for genetically modifying the genome of *Lactobacillus delbrueckii* or *Lactobacillus helveticus* comprising:

inserting the insertion sequence element into a bacterial plasmid, wherein the insertion sequence element is selected from DNA sequences of SEQ ID NO: 7, 8, 9, or 10 or a functional derivative thereof, wherein the derivative hybridizes to a complement of SEQ ID: 7, 8, 9, or 10, under very stringent conditions;

introducing the plasmid into *Lactobacillus delbrueckii* or *Lactobacillus helveticus;*

subjecting the *Lactobacillus delbrueckii* or *Lactobacillus helveticus* to conditions that inhibit replication of the plasmid; and

screening for genes that were inactivated or subjecting the *Lactobacillus delbrueckii* or *Lactobacillus helveticus* to conditions that activate expression of a gene of interest.

US 6,331,141 B1

FLUID EXTRACTION APPARATUS

Boon Pen Chua, BLK 341 Hougana Ave 7 #12-459 S(530341), Singapore, Singapore

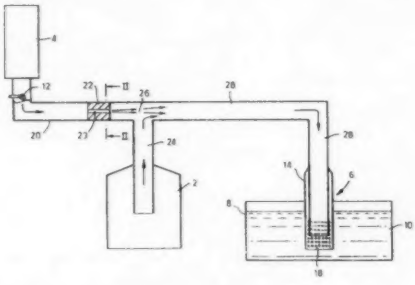
PCT No. PCT/SG97/00028, § 371 Date Dec. 18, 1998, § 102(e) Date Dec. 18, 1998, PCT Pub. No. WO97/48475, PCT Pub. Date Dec. 24, 1997

PCT Filed Jun. 19, 1997, Appl. No. 147,412

Claims priority, application Singapore, Jun. 20, 1996, 9610112

Int. Cl. F24F *7/007*

U.S. Cl. 454—344 **27 Claims**



1. A fluid extraction apparatus comprising:

a first passage;

a fluid providing mechanism connected to an upstream side of the first passage and providing a first fluid to the first passage;

a fluid flow area control device provided along the first passage and reducing a cross-sectional area of the first passage through which the first fluid passes;

a downstream passage connected to the first passage downstream of the fluid flow area control device;

a second passage connected to the downstream passage downstream of the fluid flow area control device, the second passage being distinct from the first passage upstream of the fluid flow area control device;

whereby the pressure of the first fluid at a downstream side of the fluid flow area control device is reduced to bring a second fluid from the second passage into the downstream passage, the second fluid being separate from the first fluid in the first passage before the first fluid and the second fluid meet in the downstream passage.

US 6,331,142 B1

STRAW CHOPPER FOR A COMBINE

Lutz Bischoff, Dellfeld, Germany, assignor to Deere & Company, Moline, Ill.

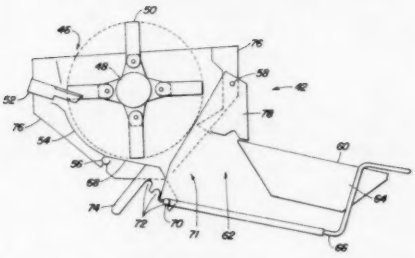
Filed Sep. 22, 1999, Appl. No. 401,553

Claims priority, application Germany, Feb. 16, 1999, 199 06 454

Int. Cl. A01F *12/40*

U.S. Cl. 460—112 **9 Claims**

1. A straw chopper for a combine comprising:



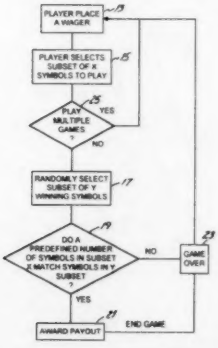
a housing (**76**) having a chopping region (**54**) with a concave inside surface and a discharge region (**68**) pivotally mounted to the housing (**76**) adjacent the chopping region (**54**) of the housing, about a first axis (**56**), for rotation relative to the chopping region (**54**) of the housing (**76**);

a chopping and conveying element (**48**, **50**) rotatably arranged in the housing for chopping and conveying straw through the chopping region (**54**) and discharge region (**68**) in the direction toward an outlet (**71**)

a distributor (**62**) having several guide vanes (**64**) adjacent the outlet for the transverse dispersal of the straw, the distributor (**62**) being pivotally mounted to the housing (**76**) about a second axis (**58**) for rotation relative to the housing; and

a locking arrangement (**70**, **72**) to connect the distributor (**62**) to the discharge region (**68**) to hold the discharge region (**68**) and the distributor (**62**) in place about the first and second axes (**56**, **58**) respectively in operating positions.

US 6,331,143 B1
VIDEO NUMBERS GAME
Mark L. Yoseloff, South Glastronbury, Conn., assignor to Shuffle Master, Inc., Eden Prairie, Minn.
Filed Jun. 5, 1997, Appl. No. 869,930
Int. Cl. A63F *13/00*
U.S. Cl. 463—18 **28 Claims**



1. A method of playing an electronic wagering game on a gaming device that generates electronic representations of symbols, and includes a video screen for displaying selected symbols from a predefined set of game symbols, comprising the steps of:

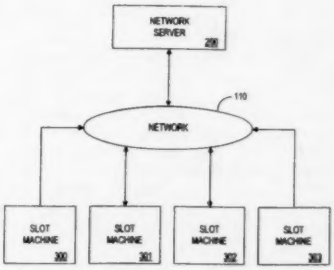
a player placing a wager to participate in the game;

selecting at least one first subset of symbols chosen to play from the predefined set of game symbols, wherein the first subset of game symbols chosen to play consists of x symbols and wherein only the first subset of symbols and not the entire predefined set of game symbols is electronically displayed on a video screen;

activating a random selection process for identifying a second subset of y symbols from the predefined set of game symbols, wherein the second subset of symbols are also displayed on the video screen, wherein x and y are integers of equal value, and wherein each symbol in the first and second subsets are selected from the complete set of predefined game symbols; and

awarding the player an immediate payout when a predefined number of symbols in the first subset of symbols matches a predefined number of symbols included in the second subset of symbols.

US 6,331,144 B1
ELECTRONIC GAMING DEVICE OFFERING A GAME OF KNOWLEDGE FOR ENHANCED PAYOUTS
Jay S. Walker, Ridgefield; James A. Jorasch, Stamford, and Thomas M. Sparico, Riverside, all of Conn., assignors to Walker Digital, LLC, Stamford, Conn.
Continuation of application No. 08/885,157, filed on Jun. 30, 1997. This application Nov. 15, 2000, Appl. No. 713,046.
This patent is subject to a terminal disclaimer.
Int. Cl. A63F *9/00*
U.S. Cl. 463—20 **19 Claims**



1. A method for providing a slot machine game and a game of knowledge, comprising:

initiating a presentation to a player of spinning reels of a slot machine game;

receiving a response to a game of knowledge;

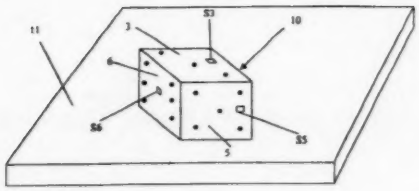
displaying a combination of symbols as a result of a play of the slot machine game;

determining the combination of symbols based on a first probability table; and

if the response to the game of knowledge satisfies a predefined threshold, determining a combination of symbols for a next play of the slot machine game based on a second probability table.

US 6,331,145 B1
ELECTRONIC DICE
Refael Sity, Kfar Saba, and Joshua Bronfeld, Mobile Post Mercaz, both of Israel, assignors to Cibro Technologies Ltd., Jerusalem, Israel
PCT No. PCT/IL98/00404, § 371 Date Feb. 28, 2000, § 102(e) Date Feb. 28, 2000, PCT Pub. No. WO99/11344, PCT Pub. Date Mar. 11, 1999
PCT Filed Aug. 24, 1998, Appl. No. 486,373
Claims priority, application Israel, Aug. 31, 1997, 121666
Int. Cl. A63F *9/24*
U.S. Cl. 463—22 **40 Claims**

1. A die having n faces, where n is greater than 2, each face being identifiable and comprising wireless transmitting means for



transmitting data to identify at least which of the n faces is lying face down when the die is lying on a surface.

US 6,331,146 B1

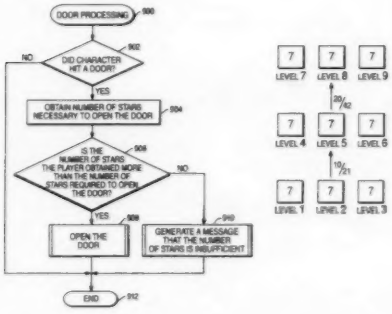
VIDEO GAME SYSTEM AND METHOD WITH ENHANCED THREE-DIMENSIONAL CHARACTER AND BACKGROUND CONTROL

Shigeru Miyamoto; Yasunari Nishida; Takumi Kawagoe, and Satoshi Nishiumi, all of Kyoto, Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan

Continuation of application No. 08/857,882, filed on May 16, 1997, now Pat. No. 6,155,926, and a continuation-in-part of application No. 08/765,474, filed on Apr. 29, 1997, now Pat. No. 5,963,196, and a continuation-in-part of application No. PCT/JP96/02931, filed on Oct. 9, 1996, and a continuation-in-part of application No. 08/719,019, filed on Sep. 24, 1996, now Pat. No. 6,001,015, and a continuation-in-part of application No. PCT/JP96/02726, filed on Sep. 20, 1996, and a continuation-in-part of application No. 08/562,288, filed on Nov. 22, 1995, now Pat. No. 6,022,274, Provisional application No. 60/043,756, filed on Apr. 9, 1997. This application Oct. 21, 1999, Appl. No. 422,259.

Int. Cl. A63F *13/00*

U.S. Cl. 463—32 **14 Claims**



1. For use with a video game system having a game program execution processing system including a microprocessor for executing a video game program and a coprocessor, coupled to said game microprocessor, for cooperating with said game microprocessor to execute said video game program, at least one player controller operable by a player to generate video game control signals, and a removable storage device for storing a program for controlling the operation of said video game system, a method of operating said video game system comprising the steps of:

generating a three-dimensional world display of a first video game play course;

storing the number of goals achieved by a player in said first video game course;

generating a three-dimensional world display of a second video game play course;

storing the number of goals achieved by a player in said second video game course;

maintaining a cumulative total of the number of goals achieved by a player at least on said first and second video game courses;

comparing said cumulative total of the number of goals achieved by a player at least on said first and second video game courses with a predetermined threshold; and

preventing access to a third video game course if said cumulative total is below said predetermined threshold.

US 6,331,147 B1

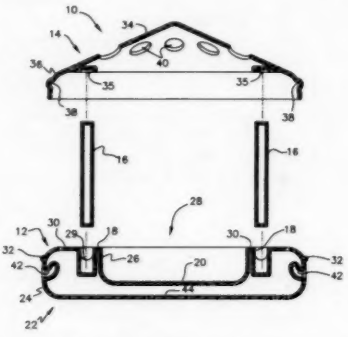
SANDBOX WITH ATTACHABLE COVER

Liliana Munro, 356 84th Avenue S.E., Calgary, Alberta, Canada, T2H 1N4, and Olaf Linnartz, 78 Somerglin Rd, Calgary, Alberta, Canada

Filed Apr. 19, 2000, Appl. No. 552,596

Int. Cl. A63G *31/00*

U.S. Cl. 472—126 **10 Claims**



1. A sandbox having a removably attachable cover, comprising:

an upwardly open vessel having a floor and an upstanding peripheral wall projecting from said floor configured to define an open receptacle within said wall and above said floor, wherein said wall has an upper surface and a plurality of lateral projections proximate said upper surface and located about the periphery of said vessel; and

a cover comprising a panel dimensioned and configured to cover said receptacle of said vessel when said cover overlies said vessel, and a downwardly projecting peripheral wall which interfits telescopingly with said upstanding peripheral wall of said vessel, wherein said cover has a plurality of depressions corresponding in locations, dimensions, and configuration to said lateral projections formed in said wall of said vessel such that said cover latches to said vessel when each said lateral projection is received in one said depression.

US 6,331,148 B1

CASINO/LOTTERY/SPORTS STYLED WAGERS AND GAMES FOR PARIMUTUEL OPERATION

Lawrence Alan Krause, and Kenneth Alan Scott, both of P.O. Box 210095, Milwaukee, Wis. 53221

Filed Mar. 12, 1999, Appl. No. 267,865

Int. Cl. A63F *9/22*

U.S. Cl. 473—274 **20 Claims**

1. A method of wagering on pari-mutual race having a predetermined number of participants, each participant having a corresponding numerical indicia assigned thereto, comprising the steps of:

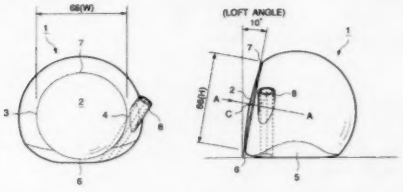
selecting at least two numbers prior to the race which correspond to the participants therein and providing same as selected positions;

determining an order of finish of the participants after the race;
combining the numerical indicia of the participants which finish the race in the selected positions and providing the same as a first combination; and
comparing the first combination of numerical indicia to a preselected number independent of the order of finish in the race.

US 6,331,149 B1
WOOD CLUB HEAD

Daisuke Mikame; Wataru Ban, and Hideo Matsunaga, all of Saitama, Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1999, Appl. No. 388,527
Claims priority, application Japan, Oct. 15, 1998, 10-294045
Int. Cl. A63B *53/04*
U.S. Cl. 473—330 **4 Claims**

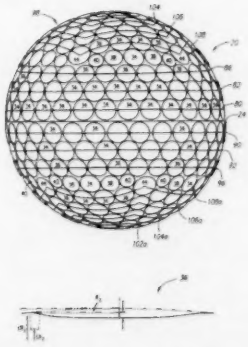


1. A wood club head comprising a hollow metal shell and a face acting as a hitting surface, said head having a volume of 200 cc or more, wherein a ratio (H/W) of a maximum height (H) of said surface to a maximum width (W) of said surface is set to be in a range of <0.65 $(H/W)<1.0$, an area of said face is set to be not smaller than 20 cm^2,and the maximum height of the face is set to be in a range of from 47 mm to 100 mm.

US 6,331,150 B1
GOLF BALL DIMPLES WITH CURVATURE CONTINUITY

Steven S. Ogg, Carlsbad, Calif., assignor to Callaway Golf Company, Carlsbad, Calif.

Filed Sep. 16, 1999, Appl. No. 398,918
Int. Cl. A63B *37/14*
U.S. Cl. 473—383 **17 Claims**

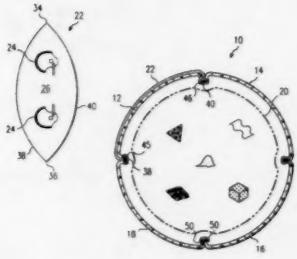


1. A golf ball having a surface thereon, the golf ball comprising:
a plurality of dimples disposed on the surface, wherein each of the plurality of dimples has a first edge and a second edge diametrically opposing the first edge, and the radius of curvature of a contour of each of the plurality of dimples is continuous along the entire contour from the first edge to the second edge, wherein a chord depth of a bottom center of each dimple of the plurality of dimples is between 0.0049 inch and 0.0054 inch.

US 6,331,151 B2
PRESENTATION FOOTBALL CONSTRUCTION

Christopher John Calandro, 4524 Sarasota Dr., The Colony, Tex. 75056

Filed Jul. 13, 1998, Appl. No. 114,348
This patent is subject to a terminal disclaimer.
Int. Cl. A63B *41/08*
U.S. Cl. 473—599 **20 Claims**

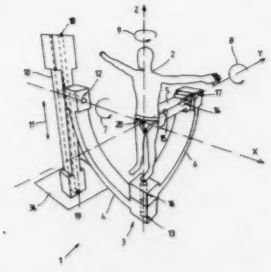


1. A novelty ball comprising:
at least one lenticular graphic panel reflecting light to present a three dimensional appearance;
a plurality of ball panels;
securing the lenticular panel to one of said ball panels; and
the ball panels being secured together to form a ball.

US 6,331,152 B1
THREE DIMENSION BODY MOVEMENT DEVICE

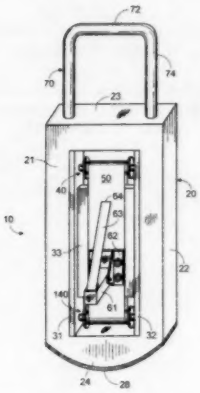
Axel Holle, Bertastrasse 12a, D-47445 Moers, Germany

PCT No. PCT/EP97/05460, § 371 Date Jun. 1, 1999, § 102(e) Date Jun. 1, 1999, PCT Pub. No. WO98/15382, PCT Pub. Date Apr. 16, 1998
PCT Filed Oct. 4, 1997, Appl. No. 269,706
Claims priority, application Germany, Oct. 5, 1996, 296 17 332 U; Jan. 15, 1997, 297 00 617 U
Int. Cl. A63G *1/00*
U.S. Cl. 482—4 **38 Claims**



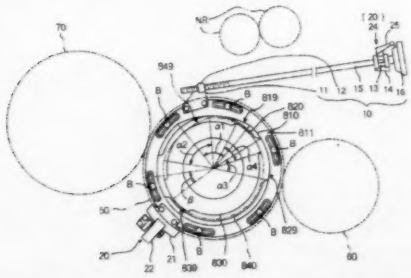
1. A device for moving people in space, comprising:
a mechanism for producing a spherical movement;
at least one device for holding a person on the mechanism producing spherical movement;
at least one input device for at least one of planning and influencing the spherical movement; and
a controller connected to both the mechanism for producing spherical movement and the input device.

US 6,331,153 B1
PORTABLE LEG EXERCISING DEVICE
Robert T. McClellan, 3385 Yolanda, Springfield, Oreg. 97477
Filed Jun. 12, 2000, Appl. No. 593,379
Int. Cl. A63B *22/04;69/16*
U.S. Cl. 482—52 **13 Claims**



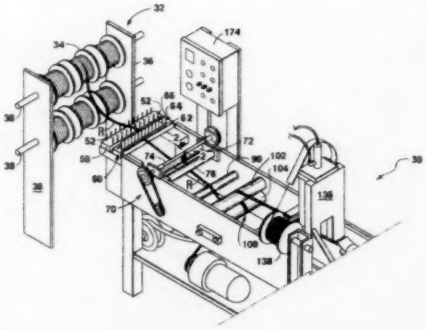
1. A portable leg exercising device comprising:
a frame having a top, bottom, and two sides;
an upper roller subassembly including an upper roller rotatably positioned adjacent said top of said frame;
a lower roller subassembly including a lower roller rotatably positioned adjacent said bottom of said frame;
a continuous belt extending around and between said upper and lower rollers; and
first and second pedal subassemblies each comprising a foot peg attached to said belt at respective first and second locations on the outer surface of said belt that are opposite to each other when said pedal subassemblies are located substantially midway between said upper and lower roller assemblies, and two strap members attached to said belt and a respective foot peg.

US 6,331,154 B1
PIN ACTION TIMING ADJUSTMENT DEVICE IN FOLDING CYLINDER AND FOLDING DEVICE
Kazuaki Shibuya; Tomonari Nakajima, both of Kawasaki, and Seiji Suzuki, Yokohama, all of Japan, assignors to Tokyo Kikai Seisakusho, Ltd., Tokyo, Japan
Filed Oct. 13, 1999, Appl. No. 417,997
Claims priority, application Japan, Jul. 15, 1999, 11-202202
Int. Cl. B31P *1/08*
U.S. Cl. 493—424 **7 Claims**



1. A pin action timing adjustment device for a folding cylinder, comprising:
a folding cylinder,
plural pin mechanisms which cause pins provided in said folding cylinder to rise and set on the outer circumferential surface of said folding cylinder,
plural folding blade mechanisms which cause folding blades to rise and set on the outer circumferential surface of said folding cylinder in conjunction with the rising and setting of said pins provided in said folding cylinder,
a pin action fixed cam having the same center as the rotation center of said folding cylinder,
a folding blade action fixed cam having the same center as the rotation center of said folding cylinder,
a pin action rotating cam and folding blade action rotating cam formed in one piece having the same rotation center as the rotation center of the folding cylinder, which can selectively change over between a state wherein the cams rotate in a predetermined relation to the rotation of the folding cylinder and a state wherein they have stopped in a predetermined relation to said pin action fixed cam and folding blade action fixed cam,
a pin cam follower provided in said pin mechanisms which causes said pins to rise and set from the outer circumferential surface of the folding cylinder together with the pin action fixed cam and pin action rotating cam,
a folding blade cam follower provided in said folding blade mechanisms which causes said folding blades to rise and set from the outer circumferential surface of the folding cylinder together with the folding blade action fixed cam and folding blade action rotating cam,
a control mechanism linked to the pin action fixed cam which causes the pin action fixed cam to undergo an angular displacement around its center, and
a stop mechanism connectable to the pin action fixed cam, and which stops the pin action fixed cam with a phase whereby it was displaced by said control mechanism.

US 6,331,155 B2
RIBBON CURLING MACHINE AND PROCESS
Dean S. Hanna, 10564-1/2 Eastborne Ave., Los Angeles, Calif. 90024
Filed Feb. 16, 1999, Appl. No. 250,884
Int. Cl. B31B *1/36*
U.S. Cl. 493—459 **12 Claims**



1. A machine for making bows of curled ribbon, comprising:
a spindle having axially extended ribbon engaging corners, said cornered spindle spinning at a first circular speed (RPM); and
a tensioning system, said tensioning system tensioning a ribbon over said spindle, said ribbon travelling in a tensioned manner over said spinning cornered spindle at a second linear speed (feet per minute, FPM), the tangential linear speed corresponding to said first circular speed of said spindle is faster than said second linear speed of said ribbon; whereby
said spindle locally stretches or stresses said ribbon, thereby curling said ribbon.

US 6,331,156 B1

ELECTRONIC ENDOSCOPE

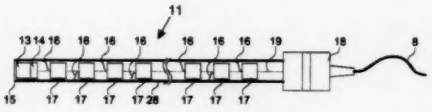
Ulrich Haefele, Oberderdingen, and Michael Voegele, Kaempfelbach, both of Germany, assignors to Richard Wolf GmbH, Knittingen, Germany

Filed Jun. 8, 2000, Appl. No. 589,846

Claims priority, application Germany, Jun. 21, 1999, 299 10 795 U

Int. Cl. A61B *1/07*

U.S. Cl. 600—179 17 Claims



1. An electronic endoscope with a picture sensor located at its distal end and with several illumination units (LEDs) integrated in the endoscope, for producing illumination light irradiated at the distal endoscope end, wherein the illumination units are arranged as a linear and axial array of LEDs in a space, of an enveloping tube, connecting proximally to the picture sensor, wherein to the LEDs there are allocated fiber-optics into which the light irradiated by the LEDs may be coupled and wherein the fiber-optics run up to the distal endoscope end and here are grouped together to a bundle.

US 6,331,157 B2

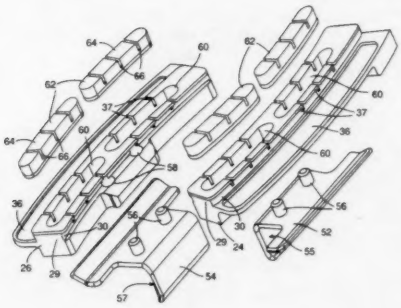
APPARATUS AND METHODS FOR OFF-PUMP CARDIAC SURGERY

Andrew H. Hancock, Fremont, Calif., assignor to Heartport, Inc., Redwood City, Calif.

Filed Apr. 15, 1999, Appl. No. 293,630

Int. Cl. A16B *17/02*

U.S. Cl. 600—232 4 Claims



1. Apparatus for performing surgery on a heart of a patient, comprising:

a first arm, a second arm and an actuator, the actuator moving the first arm relative to the second arm, at least one of the first and second arms having a receptacle thereon;

a first blade on the first arm and a second blade on the second arm, the first and second blades having first and second surfaces facing away from each other, the first and second surfaces being adapted to atraumatically engage tissue or bone for the retraction thereof;

a stabilizer adapted to be coupled to one of the first and second arms and having a foot, the foot being configured to atraumatically engage the surface of the heart; and

a suture stay removably mounted to the receptacle.

US 6,331,158 B1

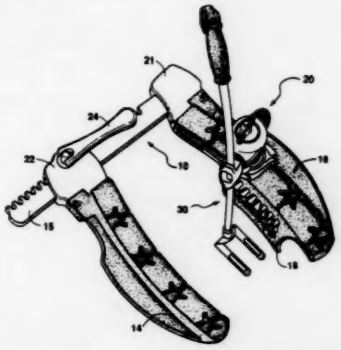
SURGICAL RETRACTOR APPARATUS FOR OPERATING ON THE HEART THROUGH AN INCISION

Lawrence W. Hu, Mountain View; David J. Paul, Scotts Valley; Eugene Edward Reis, San Jose, and Harry Leonard Green, II, Santa Cruz, all of Calif., assignors to Cardiothoracic Systems, Inc., Cupertino, Calif.

Filed May 4, 1999, Appl. No. 305,810

Int. Cl. A61B *17/02*

U.S. Cl. 600—232 32 Claims



1. A retractor assembly for use in operating on a heart through an incision in a patient comprising:

a drive mechanism having attached thereto a first retractor blade and a second retractor blade, said first and second retractor blades adapted to engage opposite sides of said incision, said first retractor blade being moveable relative to said second retractor blade so as to spread apart said incision, at least one of said first and second retractor blades having a rail extending along a length thereof;

a base member adapted to cooperatively engage said rail, said base member being slidable along a length of said rail when in an open configuration and adapted to resist any movement relative to said rail when in a locked configuration, said base member having a top section having a ball-shaped member; and

a body member moveably attached to said base member and adapted to hold a surgical instrument, said body member having a socket engaging said ball-shaped member, said ball-shaped member and said socket defining the relative movement between said body member and said base member.

US 6,331,159 B1

DEVICE FOR MEASURING PHYSIOLOGICAL STATE

Kazuhiko Amano, Suwa; Kazuo Uebaba, Yokohama, and Hitoshi Ishiyama, Toride, all of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of application No. 08/860,579, filed as application No. PCT/JP96/03211, filed on Nov. 1, 1996. This application Aug. 11, 2000, Appl. No. 636,775.

Claims priority, application Japan, Nov. 1, 1995, 7-285411; Nov. 1, 1995, 7-285412

This patent is subject to a terminal disclaimer.

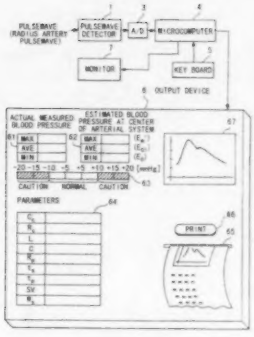
Int. Cl. A61B *5/00;5/02*

U.S. Cl. 600—300 4 Claims

1. A device for measuring a physiological state in an organism having an arterial system extending from a center portion of the organism's body to a periphery thereof, said device comprising:

measuring means for measuring the physiological state on the basis of a pulse wave detected at a periphery of the arterial system; and

analysis means for calculating circulatory state parameters, including viscoelasticity of an aorta of the arterial system,



based on the measured physiological state, to show a circulatory state of the arterial system from the center to the periphery.

US 6,331,160 B1

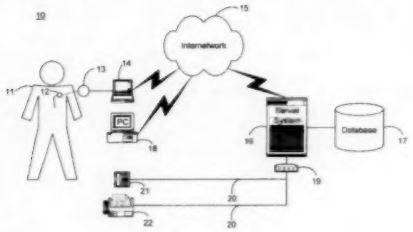
SYSTEM AND METHOD FOR PROVIDING PATIENT STATUS FEEDBACK VIA AN AUTOMATED PATIENT CARE SYSTEM WITH SPEECH-BASED WELLNESS MONITORING

Gust H. Bardy, Seattle, Wash., assignor to Cardiac Intelligence Corporation, Seattle, Wash.

Continuation of application No. 09/361,777, filed on Jul. 26, 1999, now Pat. No. 6,203,495, which is a continuation-in-part of application No. 09/324,894, filed on Jun. 3, 1999. This application Oct. 10, 2000, Appl. No. 686,712.

Int. Cl. A61N *5/00*

U.S. Cl. 600—300 **15 Claims**



1. A system for providing patient status feedback via an automated patient care system with speech-based wellness monitoring, comprising:

an implantable medical device collecting device measures on a substantially continuous basis from an implant recipient;

a database module receiving the device measures as physiological measures for storage into a patient care record, the physiological measures comprising at least one of collected or derived physiological measures;

a remote client obtaining patient wellness indicators through voice feedback provided by the implant recipient substantially contemporaneous to the collection of at least one set of the device measures;

a feedback module processing the voice feedback against a stored speech vocabulary into normalized quality of life measures for storage into the patient care record; and

an analysis module analyzing the physiological measures and the quality of life measures stored in the patient care record relative to at least one of other physiological measures and other quality of life measures to generate patient status feedback.

US 6,331,161 B1

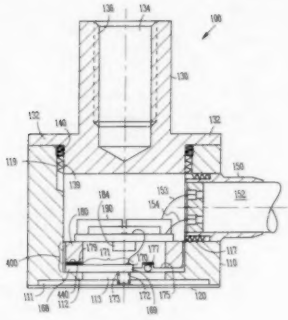
METHOD AND APPARATUS FOR FABRICATING A PRESSURE-WAVE SENSOR WITH A LEVELING SUPPORT ELEMENT

Charles F. Chesney, Sunfish Lake, Minn.; Michael Terry Riggs, Batavia, N.Y., and Charles A. Lemaire, Apple Valley, Minn., assignors to Hypertension Diagnostics, Inc, Eagan, Minn.

Filed Sep. 10, 1999, Appl. No. 394,301

Int. Cl. A61B *5/00*

U.S. Cl. 600—485 **22 Claims**



1. A pressure-waveform sensor comprising:

a housing;

a support element; and

a piezoelectric element having a first end secured between the support element and the housing, and a second end in a cantilevered orientation;

wherein the support element and the piezoelectric element together form a plurality of support regions to level the piezoelectric element relative to the housing.

US 6,331,162 B1

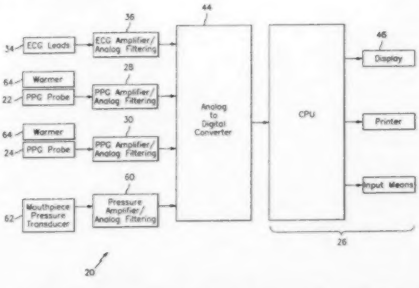
PULSE WAVE VELOCITY MEASURING DEVICE

Gary F. Mitchell, 3 Draper Rd., Dover, Mass. 02030

Provisional application No. 60/118,166, filed on Feb. 1, 1999. This application Jan. 28, 2000, Appl. No. 493,892.

Int. Cl. A61B *5/00*

U.S. Cl. 600—485 **31 Claims**



1. A method for determining the pulse wave velocity of blood in the descending thoracic aorta comprising the steps of:

a. obtaining a first pulse waveform of blood in blood vessels near a first location on the surface of a patient's skin and proximate the fourth thoracic vertebra;

b. obtaining a second pulse waveform of blood in blood vessels near a second location on the surface of the skin and proximate the second lumbar vertebra; and

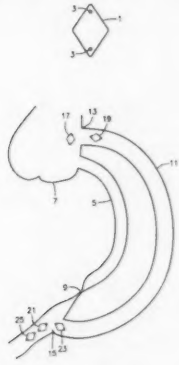
c. calculating a pulse wave velocity by:

i. determining a first reference point on the first pulse waveform;

ii. using a fiducial reference point to determine a corresponding second reference point on the second pulse waveform;

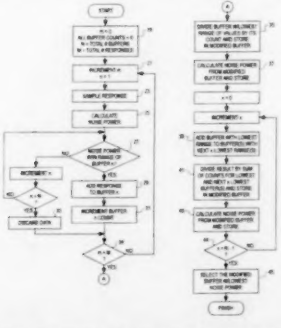
iii. determining a time difference between the first and second reference points; and
iv. dividing a distance between the first and second surface locations by the time difference.

US 6,331,163 B1
PROTECTIVE COATING FOR BODILY SENSOR
Shay Kaplan, Givat Ela, Israel, assignor to Microsense Cardiovascular Systems (1196) Ltd., Givat Ela, Israel
Continuation-in-part of application No. 09/004,420, filed on Jan. 8, 1998. This application Jul. 16, 1999, Appl. No. 354,631.
Int. Cl. A61B *5/02*
U.S. Cl. 600—486 **18 Claims**



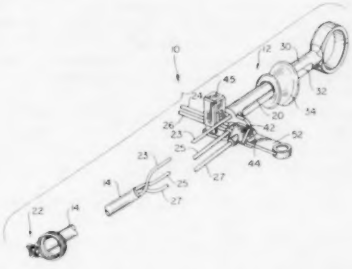
1. A device for implantation into an anatomical location inside a body, comprising:
a sensor including a mechanically vibratable membrane; and
a protective layer formed from a polyxylylene polymer material and deposited on at least the mechanically vibratable membrane.

US 6,331,164 B1
HEARING TEST APPARATUS AND METHOD HAVING ADAPTIVE ARTIFACT REJECTION
Gregory R. Shaw, Calgary, Canada, and Mead C. Killion, Elk Grove Village, Ill., assignors to Etymotic Research, Inc., Elk Grove Village, Ill.
Filed Mar. 17, 2000, Appl. No. 528,055
Int. Cl. A61B *5/00*
U.S. Cl. 600—559 **20 Claims**



1. A method employed by a hearing test device comprising:
(a) transmitting a stimulus into an ear canal of a subject;
(b) receiving a response to the stimulus from the ear canal;
(c) splitting the response into a noise component and a signal component;
(d) calculating a noise power from the noise component;
(e) based on the calculated noise power, storing the noise component in one of a plurality of noise buffers and the signal component in a corresponding one of a plurality of signal buffers;
(f) repeating (a) through (e) for a plurality of stimuli;
(g) selecting a combination of the plurality of noise buffers having a lowest noise power;
(h) calculating a signal power from a combination of signal buffers corresponding to the selected combination of noise buffers; and
(i) calculating a signal to noise ratio from the signal power and the lowest noise power.

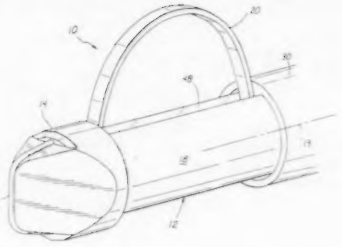
US 6,331,165 B1
BIOPSY INSTRUMENT HAVING IRRIGATION AND ASPIRATION CAPABILITIES
Vincent Turturro, Miramar; Jose L. Francese, Miami Springs; Saul Gottlieb, Miramar, and Juergen Kortenbach, Miami Springs, all of Fla., assignors to Scimed Life Systems, Inc., Maple Grove, Minn.
Continuation-in-part of application No. 08/756,260, filed on Nov. 25, 1996, now Pat. No. 5,857,507. This application May 15, 1998, Appl. No. 79,168.
Int. Cl. A61B *10/00*
U.S. Cl. 600—562 **61 Claims**



1. A sample collector for use with a biopsy instrument having a suction passageway at least partially defined by a wall extending laterally to the suction passageway and an access opening located in the wall, the sample collector comprising:
a catcher handle having a securing end; and
a catcher body having a screen, the catcher body configured for insertion into the access opening, the catcher body being attached to the securing end of the catcher handle, and being positionable within the suction passageway upon insertion into the access opening.

US 6,331,166 B1
BREAST BIOPSY SYSTEM AND METHOD
Fred H. Burbank, San Juan Capistrano; Michael L. Jones, Capistrano Beach, and Paul Lubock, Laguna Niguel, all of Calif., assignors to SenoRx, Inc., Aliso Viejo, Calif.
Provisional application No. 60/076,973, filed on Mar. 3, 1998. This application Apr. 8, 1998, Appl. No. 57,303.
Int. Cl. A61B *5/00*
U.S. Cl. 600—567 **33 Claims**

1. A biopsy instrument for isolating body tissue, comprising:
an elongate shaft having a longitudinal axis and a distal end;
an electrosurgical tissue cutting element having a curvilinear cutting surface secured to the distal end of the shaft; and
a proximal tissue cutting, element disposed on the elongate shaft proximal of the distal tissue cutting element which is radially extendable from a radially retracted position to a radially



extended position, relative to the longitudinal axis, having an arcuate shape and being movable in said radially extended position and arcuate shape to isolate a desired tissue specimen from surrounding tissue by defining a peripheral margin about said tissue specimen.

US 6,331,167 B1

Patent Not Issued For This Number

US 6,331,168 B1

GOLF TRAINING HEAD GEAR FOR DETECTING HEAD MOTION AND PROVIDING AN INDICATION OF HEAD MOVEMENT

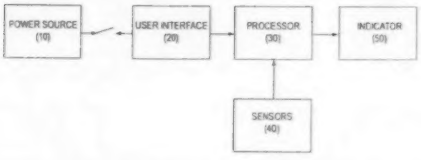
Roger David Socci, Reston, Va., and Robert Leslie Wakenight, New Market, Md., assignors to Creative Sports Technologies, Inc., Woodbridge, Va.

Continuation-in-part of application No. 09/337,007, filed on Jun. 28, 1999, now Pat. No. 6,048,324, which is a continuation of application No. 08/957,073, filed on Oct. 24, 1997, now Pat. No. 5,916,181. This application Mar. 7, 2000, Appl. No. 521,102.

This patent is subject to a terminal disclaimer.

Int. Cl. A61B *5/00*

U.S. Cl. 600—595 **13 Claims**



1. Head gear apparatus to sense the instantaneous position of the wearer's head relative to a desired head position for a golf swing and to provide a signal to the wearer when the wearer's head is within proper head position parameters for said golf swing, or, alternatively, to provide a signal to the wearer when the wearer's head is not within said proper head position parameters for said golf swing, said head gear comprising:

sensor devices sensing the movement of the wearer's head from a known initial position established at a time prior to initiation of said golf swing and outputting an electrical signal indicative of the direction and rotational speed of the wearer's head movement;

an analog to digital converter for converting said electrical signal to a digital data stream,

a digital processor for receiving said digital data stream, performing an integration to calculate an angular displacement related to said electrical signal and comparing said calculated angular displacement to a predetermined digital datum establishing criterion limits for predetermined golf swing,

said digital processor receiving further data, comprising additional information, to assist in comparing said criterion limits and said calculated angular displacement to determine whether the wearer's head is within or is not within said criterion limits;

an alarm output device for generating an alarm when a specific movement is within or not within said established criterion, and

an interface device for enabling input of at least some of said additional information to said digital processor.

US 6,331,169 B1

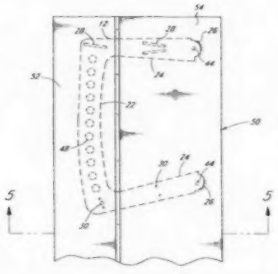
ORTHOPAEDIC BRACE HAVING ONE-PIECE CUFF

Charles A. Bastyr, and Joseph F. Nebolon, both of San Diego, Calif., assignors to DJ Orthopedics, LLC, Vista, Calif.

Division of application No. 08/770,651, filed on Dec. 19, 1996, now Pat. No. 6,110,137. This application Aug. 29, 2000, Appl. No. 649,936.

Int. Cl. A61F *5/00*

U.S. Cl. 602—16 **14 Claims**



1. A method for fabricating a cuff for an orthopaedic brace, comprising:

forming a generally U-shaped frame from a single piece of sheet material so that said frame has a center segment and two extensions projecting from the ends of said center segment;

placing said frame in the cavity of a mold;

introducing a plastic material into said cavity and causing it to form a continuous covering surrounding at least portions of said center segment and said extensions;

removing said frame from said mold; and

bending said center segment into an arcuate shape.

US 6,331,170 B1

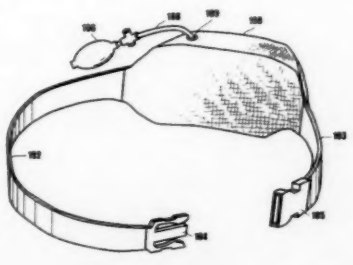
ADJUSTABLE BACK SUPPORT

Griffin Ordway, 662 Matagual Dr., Vista, Calif. 92083

Filed Jun. 5, 2000, Appl. No. 586,631

Int. Cl. A61F *5/00*

U.S. Cl. 602—19 **8 Claims**



1. A back support comprising:

a. an elongated elastic back support member, having first and second longitudinal ends disposed along the longitudinal axis

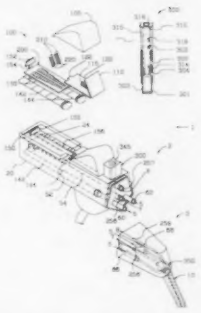
of said elongated member, said back support member being stretchable in at least the longitudinal direction and forming an enclosure;

b. an inflatable apparatus received within the enclosure of said back support member;

c. a controllable inflating apparatus for inflating said inflatable apparatus coupled to said inflatable apparatus; and

d. at least one strap, having a first end and a second end, said first end being connected to said first longitudinal end of said elongated back support member and said second end being connected to said second longitudinal end of said elongated back support member, wherein said second side of said back support member is connected opposite said first side of said back support member.

e. a pump for inflating said inflatable device, wherein said pump slideably engages said strap for selective positioning of said pump along said strap.



the fluid sealant dispensing pathway.

US 6,331,171 B1

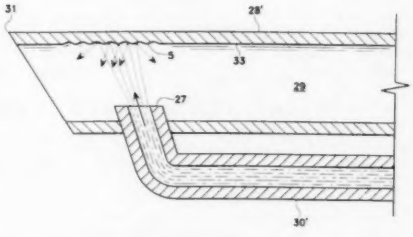
TIP FOR A LIQUEFRACTURE HANDPIECE

Donald M. Cohen, Irvine, Calif., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of application No. 09/130,131, filed on Aug. 6, 1998, now Pat. No. 5,997,499, which is a continuation-in-part of application No. 09/090,433, filed on Jun. 4, 1998, now Pat. No. 6,080,128. This application Oct. 1, 1999, Appl. No. 411,747.

Int. Cl. A61M *1/00*

U.S. Cl. 604—27 **6 Claims**



4. A liquefaction handpiece, comprising:

a) a body having an irrigation tube and an aspiration tube, the irrigation tube being external to the aspiration tube and having a distal tip that terminates internal to the aspiration tube, the aspiration tube having an internal wall; and

b) a roughened area on the internal wall opposite the distal tip of the irrigation tube.

US 6,331,172 B1

APPLICATOR FOR DISPENSING MEASURED QUANTITIES WITH USE OF CONTROLLED SUCTION

Gordon Howard Epstein, Fremont; Alan Plyley, and Russell James Redmond, both of Goleta, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Apr. 14, 1997, Appl. No. 838,078

Int. Cl. A61M *37/00*

U.S. Cl. 604—82 **59 Claims**

1. A manually operable medical fluid applicator for dispensing mixed sealant on to a work surface, the applicator comprising:

a) a fluid sealant dispensing pathway connecting with multiple sources of sealant components and including a mixing region where the sealant components can be mixed;

b) a suction pathway connectable to a suction source and with the dispensing pathway; and

c) a suction control valve operable to connect the suction pathway with the fluid dispensing pathway to apply suction to, and to remove undesired material from, the mixing region of

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US 6,331,173 B1

DEVICE FOR DISPLACING A MEMBER IN A CONTAINER

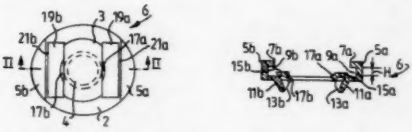
Olle Ljungquist, Täby, Sweden, assignor to Pharmacia AB, Stockholm, Sweden

Filed Apr. 20, 1999, Appl. No. 294,552

This patent is subject to a terminal disclaimer.

Int. Cl. A61M *5/00*

U.S. Cl. 604—191 **10 Claims**



1. A multi-chamber ampoule, comprising

a container having at least one movable partition therein, the movable partition separating a first chamber from a second chamber and being adapted to sealingly isolate at least two substances to be mixed with each other;

a seal or plunger movably disposed in the container;

a holder connected to the container; and

a screw actuator engageable with the seal or plunger for displacing the same in the container, the screw actuator having a male thread adapted to extend within the container as the screw actuator displaces the seal or plunger;

wherein the holder includes a female thread engaged or engageable with the screw actuator male thread; and

wherein the screw actuator is provided with a bore therethrough for slidably receiving a dispensing rod.

US 6,331,174 B1

PREFILLED, LOW PARTICLE, STERILE DISPOSABLE SYRINGE FOR INJECTING PREPARATIONS AND PROCEDURE FOR MANUFACTURE

Michael Reinhard, Ober-Olm, and Michael Spallek, Ingelheim, both of Germany, assignors to Schott Glaswerke, Germany

Filed Sep. 15, 1995, Appl. No. 529,195

Claims priority, application Germany, Oct. 27, 1994, 44 38360

Int. Cl. A61M *5/00*

U.S. Cl. 604—232 **20 Claims**

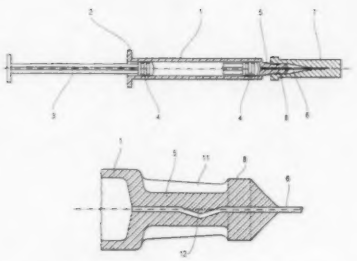
1. A prefillable, low-particle, sterile, single use syringe for the injection of preparations having a filling volume of less than 5 ml, the syringe comprising:

a syringe plunger;

a piston rod connected to the syringe plunger; and

a syringe body, the syringe body including:

a syringe cylinder having a first end and a second end and inner walls defining a cylinder interior and an inner gliding



surface, the first end of the cylinder being open for reception of the syringe plunger, the syringe cylinder and the syringe plunger together defining a filling volume within the syringe cylinder of less than 5 ml, the syringe plunger being movable within the syringe cylinder by means of the piston rod;

a grip formed proximate the first end of the syringe cylinder;

a tapered syringe head having an outer surface and walls formed integrally as an extension of the second end of the syringe cylinder, the tapered syringe head being formed from the same material as the syringe cylinder and including a conically tapered portion;

wherein the syringe body is formed of plastic that is gamma-sterilizable and/or ethyleneoxide-sterilizable, without any change causing functional deterioration of chemical and physical properties, in particular brittleness and color;

wherein the walls of the syringe cylinder and the syringe head are so formed with regard to water vapor permeability that they have a permeability of less than 0.08 $g/m^2 \times d$ at the wall thickness of 500 μm, whereby the wall is transparent at least in the area of the syringe cylinder; and

an injection needle having a first end extending through and integrated directly into the tapered syringe head and indisconnectably fastened therein and a second end extending out of the tapered syringe head proximate the conically tapered portion of the syringe head; and

a protective cap of a soft material covering the injection needle so that the needle pierces the protective cap and is thereby sealed, the cap having an inner side that is in sealing abutment with the outer surface of the tapered syringe head, so that the outer surface of the needle is also sealed, whereby the protective cap is gamma-sterilizable and/or ethyleneoxide-sterilizable, without any change causing functional deterioration.

US 6,331,175 B1

METHOD AND KIT FOR IMAGING AND TREATING ORGANS AND TISSUES

Milton David Goldenberg, Short Hills, N.J., assignor to Immunomedics, Inc., Morris Plains, N.J.

Division of application No. 07/866,789, filed on Apr. 7, 1992, now Pat. No. 5,776,093, which is a continuation-in-part of application No. 07/167,077, filed on Mar. 11, 1988, now Pat. No. 5,101,827, which is a continuation of application No. 06/751,877, filed on Jul. 5, 1985, now Pat. No. 4,735,210. This application Jul. 6, 1998, Appl. No. 110,181.

Int. Cl. A61M *25/00*

U.S. Cl. 604—522 **15 Claims**

1. An immunological method of ablating a cell in a mammalian subject, the method comprising administering to the subject requiring ablation of a cell, a composition comprising an antibody or fragment specific to a hormone receptor or growth factor receptor on a cell targeted for ablation, wherein the antibody or fragment is conjugated to a chemical or radiation ablation agent.

US 6,331,176 B1

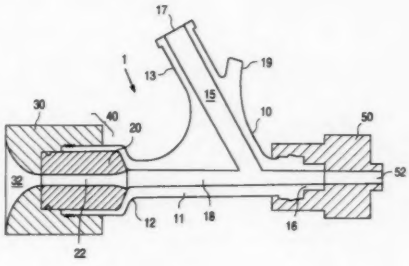
BLEED BACK CONTROL ASSEMBLY AND METHOD

Neil M. Becker, Temecula; Duncan Clarke, Murrieta; Chuck Peterson, Murrieta; Albert A. Quinones, Murrieta; Paul Haldeman, Murrieta; Kenneth K. Armstrong, Riverside; Victor Wilson, Quail Valley; Bruce Wilson, Escondido; Gary Thompson, Morgan Hill, and William P. Colvan, San Diego, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Mar. 11, 1999, Appl. No. 267,754

Int. Cl. A61M *25/16*

U.S. Cl. 604—533 **5 Claims**



1. A bleed back control assembly comprising:

a side arm body having a proximal end, a distal end, and a lumen connecting said proximal and distal ends, said side arm body also having a seal cavity formed in said proximal end, said lumen being in fluid communication with said seal cavity;

a seal mechanism coupled to the proximal end of said side arm body, said seal mechanism comprising:

a cap assembly coupled to a seal assembly and coupled to said proximal end of said side arm body, said cap assembly restraining said seal assembly within said seal cavity and said cap assembly operable to engage said seal assembly in response to active user manipulation and disengage from said seal assembly in the absence of active user manipulation and said cap assembly having a lumen having a proximal aperture communicating with the exterior of said cap assembly; and

said seal assembly comprising elastomeric material inhibiting said cap assembly lumen from being in fluid communication with said side arm body lumen; and

wherein said cap assembly is operable to control axial translation and displacement of said seal mechanism; and

wherein displacement of said cap assembly is limited by one or more stop means, wherein said stop means comprises one or more notches formed in the interior of said cap assembly.

US 6,331,177 B1

MULTIPLE BEAM LASER SCULPTING SYSTEM AND METHOD

Audrey Munnerlyn, Mountain View, and George Caudle, San Jose, both of Calif., assignors to VISX, Incorporated, Santa Clara, Calif.

Provisional application No. 60/082,156, filed on Apr. 17, 1998. This application Mar. 23, 1999, Appl. No. 274,499.

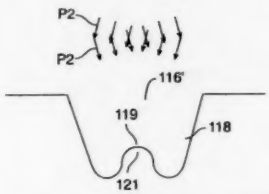
Int. Cl. A61B *18/18*

U.S. Cl. 606—5 **14 Claims**

1. A method for sculpting a material to effect a predetermined change in shape, the method comprising:

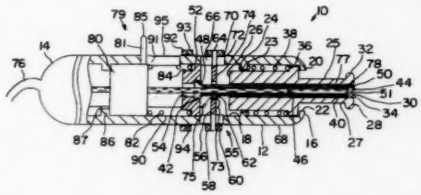
radiating a beam of an ablative energy;

absorbing the energy within a region of the material so as to ablate the region, the ablation having an edge; and,



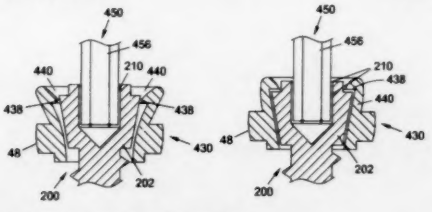
shaping the ablation at a distance from the edge by blurring the edge.

US 6,331,178 B1
USER ACTUATED LASER ENERGY DEVICE AND PROCEDURE FOR FORMING A CHANNEL WITHIN TISSUE
Marvin P. Loeb, Huntington Beach, and Samuel M. Shaolian, Laguna Niguel, both of Calif., assignors to Cardiodyne, Inc., Irvine, Calif.
Continuation of application No. 09/015,391, filed on Jan. 29, 1998, now Pat. No. 5,997,531. This application Dec. 7, 1999, Appl. No. 456,275.
Int. Cl. A61B *18/18*
U.S. Cl. 606—13 **3 Claims**



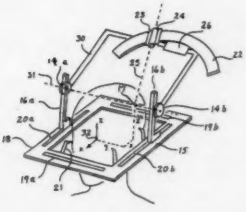
1. A surgical device for forming a channel within tissue with laser energy and comprising:
a housing;
an optical fiber for transmission of said laser energy secured to said housing and adapted for connection to a laser source;
a hollow needle defining an open bore surrounding at least a portion of said optical fiber; and
a switch for activating said laser energy transmission, said switch being located within said housing, said location of said switch being adjustable.

US 6,331,179 B1
SYSTEM AND METHOD FOR STABILIZING THE HUMAN SPINE WITH A BONE PLATE
Jim Freid; Michael E. Landry, and Erik J. Wagner, all of Austin, Tex., assignors to Spinal Concepts, Inc., Austin, Tex.
Filed Jan. 6, 2000, Appl. No. 479,458
Int. Cl. A61B *17/58*
U.S. Cl. 606—61 **130 Claims**



1. A bone plate system comprising:
a plate configured to stabilize a bone structure;
a hole passing through the plate;
a ring positionable within the hole, the ring comprising a deflectable portion;
a fastener positionable through the ring such that a head of the fastener engages the ring, the fastener configured to couple the plate to a bone; and
wherein the deflectable portion of the ring is configured to deflect outwards when the head is initially positioned in the ring and wherein the deflectable portion is configured to deflect inwards after passage of a portion of the head into the ring to couple the fastener to the ring so that removal of the fastener from the plate is inhibited.

US 6,331,180 B1
TARGET-CENTERED STEREOTAXTIC SURGICAL ARC SYSTEM WITH REORIENTATABLE ARC AXIS
Eric R. Cosman, Belmont, Mass., and Trent H. Wells, Jr., Coulterville, Calif., assignors to Sherwood Services AG, Schaffhausen, Switzerland
Continuation of application No. 08/632,596, filed on Apr. 15, 1996, now abandoned, which is a continuation of application No. 08/472,732, filed on Jun. 7, 1995, now abandoned, which is a continuation of application No. 08/207,793, filed on Mar. 7, 1994, now abandoned, which is a continuation of application No. 07/921,955, filed on Jul. 29, 1992, now abandoned, which is a continuation of application No. 07/764,108, filed on Sep. 23, 1991, now abandoned, which is a continuation of application No. 07/631,227, filed on Dec. 21, 1990, now abandoned, which is a continuation of application No. 07/478,757, filed on Feb. 12, 1990, now abandoned, which is a continuation of application No. 07/189,568, filed on May 3, 1988, now abandoned. This application Aug. 12, 1997, Appl. No. 909,655.
Int. Cl. A61B *19/00*
U.S. Cl. 606—130 **3 Claims**



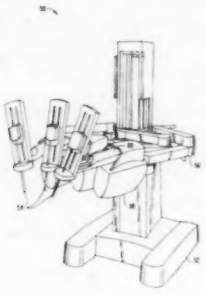
1. A target-centered stereotactic system for establishing a variable direction of access to a target in the living body comprising:
a) a body-fixed means which includes an opening for receiving a portion of the living body and can be attached to the living body in a fixed orientation relative to said living body and defining an x, y and z axis;
b) a transverse arc which is a portion of a circular arc segment and which is adapted to be rotatable connected relative to said body-fixed means;
c) rotation means comprising two rotating bearings operatively connected to said transverse arc and also securable relative to said body-fixed means which allows said transverse arc to rotate about an arc axis that is parallel to the plane of said transverse arc;
d) a slide means attached to and slidable along said transverse arc for determining a variable radial path relative to a circle having a diameter which lies along said arc axis with the center of said circle defining an anatomical target within the living body;
e) reorientation means which allows variation of the angular orientation of said arc axis to said body-fixed means and thus said living body; and
f) translation means adapted for translating said transverse arc relative to said body fixed means and thus said living body along each of said x, y and z axis, so as to move said anatomical target in said living body; whereby all of the variable radial paths defined by said slide means pass through said target, and whereby said variation of said arc axis orien-

tation augments the range of said possible radial path to said anatomical target and whereby said slide means enables an approach of a surgical probe means to said anatomical target along a radial direction.

US 6,331,181 B1
SURGICAL ROBOTIC TOOLS, DATA ARCHITECTURE, AND USE

Michael J. Tierney, Pleasanton; Thomas G. Cooper, Menlo Park; Chris A. Julian, Los Gatos; Stephen J. Blumenkranz, Redwood City; Gary S. Guthart, Foster City, and Robert G. Younge, Portola Valley, all of Calif., assignors to Intuitive Surgical, Inc., Mountain View, Calif.

Provisional application No. 60/111,713, filed on Dec. 8, 1998. This application Oct. 15, 1999, Appl. No. 418,726.
Int. Cl. A61B *19/00*
U.S. Cl. 606—130 **28 Claims**

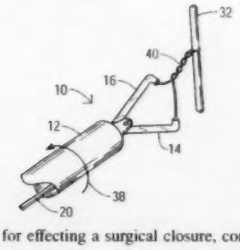


1. A robotic surgical tool for use in a robotic surgical system having a processor which directs movement of a tool holder, the tool comprising:
a probe having a proximal end and a distal end;
a surgical end effector disposed adjacent the distal end of the probe;
an interface disposed adjacent the proximal end of the probe, the interface releasably coupleable with the tool holder; and
circuitry mounted on the probe, the circuitry defining a signal for transmitting to the processor so as to indicate compatibility of the tool with the system;
wherein the signal comprises an identifier signal included in a table accessible to the processor for comparison with the signal, the table comprising a plurality of compatible tool identification signals.

US 6,331,182 B1
MEDICAL TWISTING DEVICE AND METHOD FOR FORMING A SURGICAL CLOSURE

Jonathan Tiefenbrun, 62 Country Rd., Marmaroneck, N.Y. 10543, and Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Filed Dec. 13, 1999, Appl. No. 459,437
Int. Cl. A61B *17/04*
U.S. Cl. 606—144 **17 Claims**

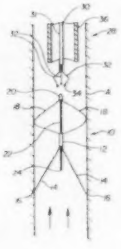


1. A method for effecting a surgical closure, comprising:
providing a medical instrument including a pair of jaws at a distal end;
inserting a distal end portion of said instrument, including said jaws, into a patient;
closing said jaws on internal tissues of the patient;
threading an at least partially flexible elongate tie member from one of said jaws to the other of said jaws so that said tie member extends between said jaws about a portion of said internal tissues;
opening said jaws and removing the jaws from said internal tissues, while maintaining said tie member extended about said portion of said internal tissues;
after the opening of said jaws, rotating said jaws to twist said tie member about itself; and
severing said tie member after the twisting thereof, to thereby form a closure at said internal tissues.

US 6,331,183 B1
BASKET FILTER

Naroun Suon, Lawrence, Mass., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.

Provisional application No. 60/101,611, filed on Sep. 24, 1998. This application Sep. 23, 1999, Appl. No. 404,530.
Int. Cl. A61M *29/00*
U.S. Cl. 606—200 **22 Claims**



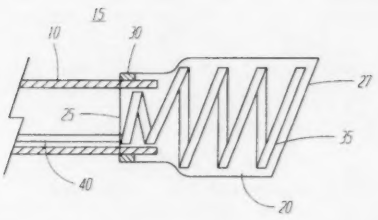
1. A thrombus filter element for placement within a blood vessel lumen defined by a blood vessel wall, comprising:
a hub having a proximal end, a distal end, and a lumen extending therethrough;
a plurality of wire extending proximally from the hub;
each wire having a first end and a second end;
the first end of each wire being fixed to the hub proximate the proximal end thereof;
the second end of each wire being fixed to a coupling;
the plurality of wires being mechanically biased to expand radially toward the blood vessel walls and to form a basket;
a plurality of struts radiating distally away from the hub;
each strut having a free end and a fixed end;
the fixed end of each strut being fixed to the hub proximate the distal end thereof;
the plurality struts being arranged to form an array;
a slider rod slidingly disposed within the lumen of the hub;
the slider rod having a distal end and a proximal end; and
the proximal end of the slier rod being fixed to the coupling.

US 6,331,184 B1
DETACHABLE COVERING FOR AN IMPLANTABLE MEDICAL DEVICE

Robert M. Abrams, Encinitas, Calif., assignor to Scimed Life Systems, Inc., Maple Grove, Minn.

Filed Dec. 10, 1999, Appl. No. 459,143
Int. Cl. A61M *29/00*
U.S. Cl. 606—200 **13 Claims**

1. A device for delivering an expandable prosthesis in a body lumen comprising:



an elongate body having a distal end and a lumen therethrough, the expandable prosthesis at least partially within the lumen; and

an expandable sheath releasably attached to the distal end of the body, the sheath having a distal opening and a lumen therethrough, the sheath further configured to receive the expandable prosthesis and at least a portion of the sheath surrounding the elongate body.

US 6,331,185 B1

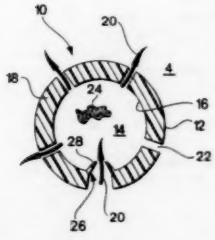
FLEXIBLE VASCULAR INDUCING IMPLANTS

Richard A. Gambale, Tyngsboro; Stephen J. Forcucci, Arlington; Michael F. Weiser, Groton; Richard T. Choh, Lowell, and Sean Forde, Watertown, all of Mass., assignors to C.R. Bard, Inc., Murray Hill, N.J.

Filed Sep. 30, 1998, Appl. No. 164,163

Int. Cl. A61F *2/06*

U.S. Cl. 623—1.1 **28 Claims**



1. An implant device comprising a flexible body formed from a single wall, which defines an interior with a volume, the flexible body constructed to have a first configuration having a first profile and a first volume and a second configuration that is compressed to define a second profile that is different from the profile of the first configuration, and a second volume that is substantially reduced from the first volume, the implant constructed so that movement of surrounding tissue in which it is implanted causes cyclical movement of the body between the two configurations.

US 6,331,186 B1

END SLEEVE COATING FOR STENT DELIVERY

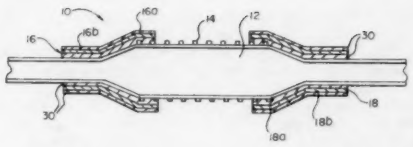
Lixiao Wang, Long Lake; The Thomas Trinh Tran, Coon Rapids; Fernando DiCaprio, Mendota Heights, and Brett A. Williams, Lino Lakes, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation-in-part of application No. 09/273,520, filed on Mar. 22, 1999. This application Oct. 27, 1999, Appl. No. 427,805.

Int. Cl. A61F *2/02;* **A61M** *25/10*

U.S. Cl. 623—1.11 **38 Claims**

1. A stent delivery system comprising: a stent delivery catheter having an expandable portion and being equipped with at least one stent retaining sleeve, the at least one stent retaining sleeve being



further characterized as having an inside diameter and an outside diameter, the inside diameter being at least partially coated with a lubricious gel which is a heat curing silicone based compound, a noncrosslinkable lubricant having at least one hydrophilic group, or a crosslinkable lubricant selected from esterified polymers, salts, amides, anhydrides, halides, ethers, hydrolyzates, acetals, formals, alkylols, quaternary polymers, diazos, hydrazides, sulfonates, nitrates, ion complexes, and mixtures thereof.

US 6,331,187 B1

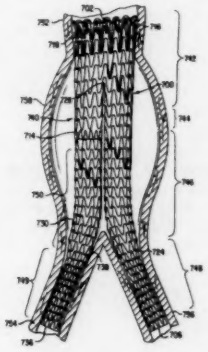
KINK RESISTANT BIFURCATED PROSTHESIS

Troy Thornton, San Francisco; Randy S. Chan, San Jose, and Lilip Lau, Sunnyvale, all of Calif., assignors to Gore Enterprise Holdings, Inc., Newark, Del.

Filed Dec. 23, 1996, Appl. No. 772,372

Int. Cl. A61F *2/06*

U.S. Cl. 623—1.13 **12 Claims**

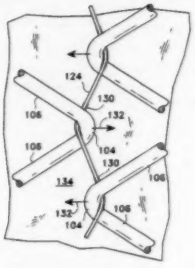


1. A stent-graft comprising:

a graft member having a proximal end and a distal end and including a single lumen graft section integral with a bifurcated graft section, said bifurcated graft section having two separate lumens;

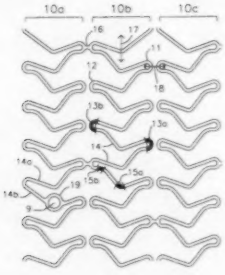
a single lumen stent section secured to at least a portion of a periphery of said single lumen graft section and extending over at least a portion of said bifuircated graft section, said single lumen stent section being formed from a helically arranged undulating member having a plurality of helical turns with undulations in one helical turn being essentially in-phase with undulations of adjacent helical turns, a portion of undulations in a first helical turn of said plurality of said helical turns extending toward said proximal end and another portion of said undulations in said first helical turn extending toward said distal end, some distally extending undulations of said first helical turn having an amplitude greater than other distally extending undulations of said first helical turn.

US 6,331,188 B1
EXTERIOR SUPPORTED SELF-EXPANDING STENT-GRAFT
Lilip Lau, Sunnyvale, and Charles Maroney, Portola Valley, both of Calif., assignors to Gore Enterprise Holdings, Inc., Newark, Del.
Continuation of application No. 08/740,030, filed on Oct. 23, 1996, now abandoned, which is a continuation of application No. 08/299,190, filed on Aug. 31, 1994, now abandoned. This application Jun. 9, 1997, Appl. No. 871,427.
This patent is subject to a terminal disclaimer.
Int. Cl. A61F *2/06*
U.S. Cl. 623—1.13 **24 Claims**



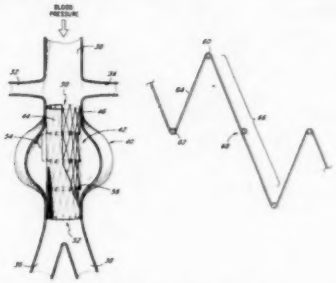
1. A device comprising:
a support component having multiple turns of an undulating member, said undulating member being formed from a single continuous wire, each turn of said undulating member having multiple undulations which define multiple apexes, wherein undulations in one turn are generally in-phase with undulations in an adjacent turn; and
a tubular, graft component substantially coaxial with said support component, said tubular graft component containing collagen and being slidably attached to said support component to allow said undulations to move longitudinally relative to said graft component.

US 6,331,189 B1
FLEXIBLE MEDICAL STENT
Lone Wolinsky, Ramat Gan, and Arvi Penner, Tel Aviv, both of Israel, assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Oct. 18, 1999, Appl. No. 419,980
Int. Cl. A61F *2/06*
U.S. Cl. 623—1.15 **38 Claims**



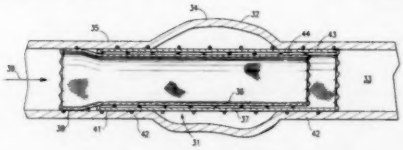
1. A medical device comprising:
a catheter and a radially expandable stent mounted on the catheter, the stent comprising
a hollow, cylindrical body comprising first and second rings extending circumferentially around the cylindrical body, each ring comprising an undulating series of peaks and valleys formed by struts connecting alternating curved peak and valley segments within the ring, the struts comprising a first curved segment curved substantially symmetrically about a single circumference of the stent such that the peaks and valleys within a ring form a nested chevron pattern; and
at least one longitudinal connection between the first and second rings.

US 6,331,190 B1
ENDOLUMINAL VASCULAR PROSTHESIS
Mehrdad M. Shokoohi, Rancho Palos Verdes; Michael R. Henson, and Gerard von Hoffmann, both of Trabuco Canyon, all of Calif., assignors to Endologix, Inc., Irvine, Calif.
Continuation of application No. 09/034,689, filed on Mar. 4, 1998, now Pat. No. 6,077,296. This application Jan. 14, 2000, Appl. No. 483,411.
This patent is subject to a terminal disclaimer.
Int. Cl. A61F *2/00*
U.S. Cl. 623—1.22 **46 Claims**



1. An endoluminal prosthesis, comprising:
a tubular wire support comprising at least first and second axially adjacent tubular segments joined by a connector extending therebetween, wherein the first and second tubular segments and the connector are formed from a single length of wire, and wherein each tubular segment comprises a series of proximal and distal bends, such that each proximal bend in the first tubular segment aligns with a distal bend in the second tubular segment to form a joint;
wherein each joint includes an eye.

US 6,331,191 B1
LAYERED ENDOVASCULAR GRAFT
Michael V. Chobotov, Santa Rosa, Calif., assignor to TriVascular Inc., Santa Rosa, Calif.
Provisional application No. 60/066,301, filed on Nov. 25, 1997. This application Nov. 25, 1998, Appl. No. 200,317.
Int. Cl. A61F *2/00*
U.S. Cl. 623—1.44 **22 Claims**



1. An endovascular graft adequate for maintaining a flow of blood therethrough and preventing leakage or failure of a compromised portion of a patient's body lumen comprising a plurality of individually deliverable thin wall graft members layered in a deployed state with at least two layers of thin wall graft member present across an entire length of the compromised portion of the patient's body lumen.

US 6,331,192 B1

BLEACHING OF CHEMICAL PULP AND TREATMENT WITH A CHELATING AGENT

Jukka Jäkärä, Vaasa; Reijo Aksela, Espoo; Aarto Parén, Vaasa, and Ilkka Renvall, Espoo, all of Finland, assignors to Kemira Chemicals Oy, Helsinki, Finland

PCT No. PCT/FI98/00887, § 371 Date Jun. 30, 2000, § 102(e) Date Jun. 30, 2000, PCT Pub. No. WO99/25919, PCT Pub. Date May 27, 1999

PCT Filed Nov. 13, 1998, Appl. No. 554,331

Claims priority, application Finland, Nov. 13, 1997, 974221

Int. Cl. D06L *3/06; 3/02*

U.S. Cl. 8—109 **11 Claims**

1. A process for bleaching chemical pulp, wherein the pulp is subjected to a first treatment step including at least one of a delignification treatment and a bleaching treatment, said first treatment step comprising admixing said pulp with a treatment chemical selected from chlorine dioxide and an admixture of chlorine dioxide and a per-compound, and said process further including a second treatment step wherein the pulp is chelated by contact with a chelating chemical to bind heavy metals into a chelate complex, the process comprising:

subjecting said pulp to said first and said second treatment steps substantially simultaneously by combining, in a single stage, said pulp with said treatment chemical and said chelating chemical; and

choosing said chelating chemical from a material selected from the group consisting of N-bis-[(1,2-dicarboxylethoxy)-ethyl]-amine; N-bis-[(1,2-dicarboxylethoxy)-ethyl]-aspartic acid, N-tris-[1,2-dicarboxylethoxy)-ethyl]-amine and alkali metal and earth-alkali metal salts of these materials.

US 6,331,193 B1

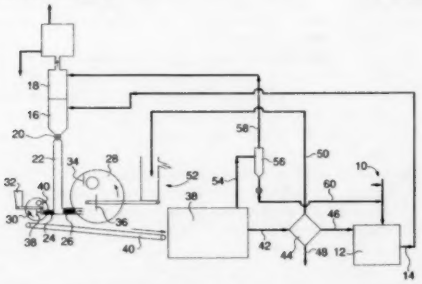
WET GRANULATION METHOD GENERATING SULFUR GRANULES

Robin Phinney, Calgary, Canada, assignor to Airborne Industrial Minerals Inc., Calgary, Canada

Filed Apr. 17, 1998, Appl. No. 61,783

Int. Cl. A01N *25/12*

U.S. Cl. 23—313 P **17 Claims**



1. The method for granulating a sulfur feedstock into granules, comprising the steps of:

providing a sulfur powder feedstock having about 99.9% particle size of −150 mesh of said 99.90% particle size of −150 mesh about 90% consisting of a particle size of −200 mesh;

providing a binder material having a moisture content and including a surfactant;

contacting said sulfur powder feedstock with said binder material;

forming a pre-moistened mixture of said feedstock and said binder material having said moisture content and including said surfactant, said mixture having a moisture content of between 4% and 8% by weight;

introducing said pre-moistened mixture on to a pan granulator containing said sulfur powder feedstock;

maintaining pan moisture conditions where the moisture content on the pan of said pan graulator is between about 1.5% to about 11% by weight; and

forming sulfur granules on said pan directly from contact of said pre-moistened mixture and said sulfur powder feedstock in the absence of seed material.

US 6,331,194 B1

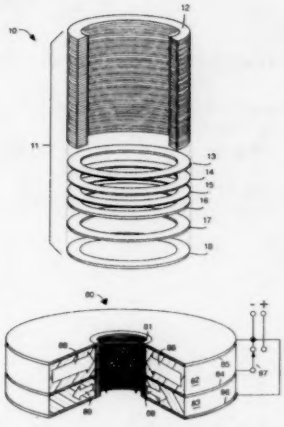
PROCESS FOR MANUFACTURING HOLLOW FUSED-SILICA INSULATOR CYLINDER

Stephen E. Sampayan, Manteca, Calif.; Michael L. Krogh; Steven C. Davis, both of Lee's Summit, Mo.; Derek E. Decker, Discovery Bay, Calif.; Ben Z. Rosenblum, Overland Park, Kans.; David M. Sanders, Livermore, Calif., and Juan M. Elizondo-Decanini, Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of application No. 08/688,669, filed on Jun. 25, 1996, now Pat. No. 5,821,705, and a continuation-in-part of application No. 08/773,504, filed on Dec. 18, 1996, now Pat. No. 5,811,944, Provisional application No. 60/031,683, filed on Nov. 22, 1996, Provisional application No. 60/035,463, filed on Jan. 14, 1997. This application Jul. 8, 1997, Appl. No. 889,587.

Int. Cl. H01G *9/00*

U.S. Cl. 29—25.03 **13 Claims**



1. A method for building hollow insulator cylinders that can have each end closed off with a high voltage electrode to contain a vacuum, comprising:

fabricating a series of fused-silica round flat plates with a central hole and equal inside and outside diameters;

depositing a metal layer onto each top and bottom surface of the fused-silica round flat plates;

aligning and stacking the coated plates; and

heating or pressing said stack enough to cause the metal layers to bond, wherein such bonding is complete enough to maintain a vacuum within the assembled structure.

US 6,331,195 B1

COANDA WATER EXTRACTOR

Michael B. Faust; Faress H. Rahman, and Philippe H. Adam, all of Redondo Beach, Calif., assignors to AlliedSignal Inc., Morristown, N.J.

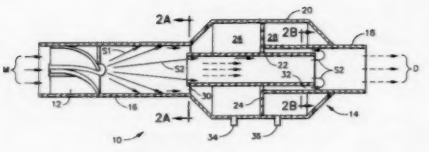
Provisional application No. 60/086,356, filed on May 20, 1998. This application May 19, 1999, Appl. No. 315,210.

Int. Cl. B01D *45/12;* **F25D** *9/00*

U.S. Cl. 55—396 **20 Claims**

1. A water extractor connected to an outlet duct, the water extractor comprising:

a swirl section having an outlet; and



a water collector section downstream of the swirl section, the water collector section including separate first and second sumps the first sump having an inlet in fluid communication with the outlet of the swirl section, the second sump having an inlet downstream of the inlet of the first sump, the inlet of the second sump being in fluid communication with the outlet of the swirl section via an air passageway;

the air passageway expanding at the inlet of the second sump and into the outlet duct.

US 6,331,196 B1

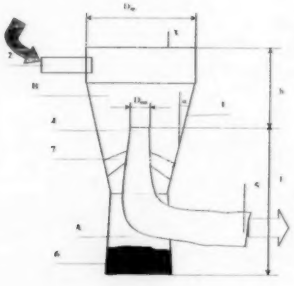
LOW TURBULENCE CO-CURRENT CYCLONE SEPARATOR

Vladimir Alperovitch, Sde Boker, Israel, assignor to Negev Tornado Ltd., Sde Boker, Israel

Filed Jun. 1, 2000, Appl. No. 584,487

Int. Cl. B01D *45/16*

U.S. Cl. 55—459.1 **16 Claims**



13. A separating device comprised of:

a co-current cyclone including:

(a) a tangential inlet fitting for introducing a cyclone feed mixture, said cyclone feed mixture containing a fluid and suspended mechanical particles;

(b) a cyclone housing having a diameter D_{cycl} near said tangential inlet fitting and having a cover substantially sealing a top face of said housing;

(c) an axial exhaust nozzle having an inlet diameter D_{out} for discharging said fluid; and

(d) a dust-collecting bin for collecting said suspended particles,

wherein said suspended particles are largely removed from said cyclone feed mixture and collected in said dust-collecting bin, thereby reducing the concentration of said suspended mechanical particles in said fluid discharged through said axial exhaust nozzle, and wherein the ratio of D_{cycl} to D_{out} is in the range of 3:1 to 20:1.

US 6,331,197 B1

SINTERED PLASTIC PARTICLES FILTER ELEMENT

Walter Herding, Hahnbach, and Wolfgang Raabe, Amberg, both of Germany, assignors to Herding GmbH Filtertechnik, Amberg, Germany

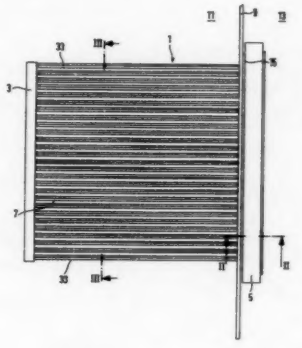
PCT No. PCT/EP98/02110, § 371 Date Dec. 8, 1999, § 102(e) Date Dec. 8, 1999, PCT Pub. No. WO98/46327, PCT Pub. Date Oct. 22, 1998

PCT Filed Apr. 9, 1998, Appl. No. 402,663

Claims priority, application Germany, Apr. 11, 1997, 197 15 196

Int. Cl. B01D *39/16*

U.S. Cl. 55—523 **11 Claims**



1. A filter element of sintered-together plastics particles having substantially the shape of a narrow, hollow box with two large, zigzag or corrugated first side walls, two narrow second side walls interconnecting the first side walls, a closed bottom side and an opposite open side, with the peaks and valleys of the first side walls extending in the direction from the bottom side to the open side and the bottom side being further provided with a foot, and the filter element, at the open side, having a head for attachment which is elongate and constitutes at least one flow passage, wherein:

the filter element comprises two unified halves each containing one of the first side walls,

the head and the foot are cast on of synthetic resin, with the head being cast on the first and second side walls such that the head surrounds with a first part of its height the first and second side walls on the outside and projects with a second part of its height beyond the first and second side walls so as to cover the ends thereof, and

the head forms in the second part of its height, in the at least one flow passage, a transition from the zigzag or corrugated space confined between the two first side walls to a substantially rectangular cross-section.

US 6,331,198 B1

COMPOSITION USEFUL AS NITRIFICATION INHIBITING ADDITIVE FOR AMMONIA PRODUCING FERTILIZERS

Krishnamurthy Puttan; Nadur Muddanna Nanje Gowda; Eranki Venkata Surya Prakasa Rao, all of Bangalore, and Sushil Kumar, Lucknow, all of India, assignors to Council of Scientific & Industrial Research, New Delmt, India

Filed Mar. 22, 1999, Appl. No. 273,361

Claims priority, application India, Feb. 12, 1999, 232/99

Int. Cl. C05B *7/00;* **C05C** *9/00*

U.S. Cl. 71—28 **9 Claims**

1. An agriculturally-effective fertilizer comprising an ammonium-producing fertilizer and a synergistically-effective nitrification-inhibiting additive, the additive comprising:

(a) 2.5 to 50% benzotiazole by wt % of the ammonium-producing fertilizer and

(b) 1 to 50% chelating agent by wt % of the ammonium-producing fertilizer,

wherein the combination of the benzotriazole and the chelating agent provides the synergistic activity of the additive.

US 6,331,199 B1

BIAXIALLY TEXTURED ARTICLES FORMED BY POWDER METALLURGY

Amit Goyal, and Robert K. Williams, both of Knoxville, Tenn., assignors to UT-Battelle, LLC, Oak Ridge, Tenn.

Filed May 15, 2000, Appl. No. 570,289

Int. Cl. B22F *9/00*

U.S. Cl. 75—246 **7 Claims**

1. A biaxially textured alloy article having a magnetism less than pure Ni comprising a rolled and annealed compacted and sintered powder-metallurgy preform article, the preform article having been formed from a powder mixture selected from the group of binary mixtures consisting of: between 99 at % and 80 at % Ni powder and between 1 at % and 20 at % Cr powder; between 99 at % and 80 at % Ni powder and between 1 at % and 20 at % W powder; between 99 at % and 80 at % Ni powder and between 1 at % and 20 at % V powder; between 99 at % and 80 at % Ni powder and between 1 at % and 20 at % Mo powder; between 99 at % and 60 at % Ni powder and between 1 at % and 40 at % Cu powder; between 99 at % and 80 at % Ni powder and between 1 at % and 20 at % Al powder; the article having a fine and homogeneous grain structure; and having a dominant cube oriented {100}<100> orientation texture; and further having a Curie temperature less than that of pure Ni.

US 6,331,200 B1

METHOD FOR PREPARING GOLD OF HIGH PURITY

Martin Stettner, Altenstadt; Matthias Grehl, Frankfurt, and Horst Meyer, Altenstadt, all of Germany, assignors to W. C. Heraeus GmbH & Co. KG, Hanau, Germany

Filed Jun. 16, 2000, Appl. No. 595,123

Claims priority, application Germany, Jun. 18, 1999, 199 28 028

Int. Cl. C22B *11/00*

U.S. Cl. 75—736 **5 Claims**

1. Method for producing gold of high purity from gold-containing noble metal solutions containing nitrate, by the following steps:

a) Destroying the nitrate in the noble metal solution, and

b) Adding a gold-reducing acid Fe^{2+} solution having a H^+ ion concentration of at least 4 mol/l, to the solution prepared in step a).

US 6,331,201 B1

BISMUTH COATING PROTECTION FOR COPPER

Peter T. McGrath, Mission Viejo, and Abayomi I. Owei, Rancho Cucamonga, both of Calif., assignors to Fry's Metals, Inc., Providence, R.I.

PCT No. PCT/US98/06479, § 371 Date Jan. 18, 2000, § 102(e) Date Jan. 18, 2000, PCT Pub. No. WO98/49367, PCT Pub. Date Nov. 5, 1998

Provisional application No. 60/045,010, filed on Apr. 28, 1997. This PCT application Mar. 31, 1998, Appl. No. 403,900.

Int. Cl. C23C *18/54;18/31*

U.S. Cl. 106—1.22 **34 Claims**

1. A coating composition that is effective for immersion plating a coating of bismuth metal onto a copper-containing surface, and that comprises a moderately to strongly acidic mixture containing dissolved bismuth, halide ion, and a sulfur-containing ligand as a complexing agent.

US 6,331,202 B1

ANTI-CORROSIVE PIGMENTS

Gregory Pipko, Katzrin, Israel, assignor to Pigmentan Anticorrosive Pigments for Paints Ltd., Katzrin, Israel

PCT No. PCT/IL98/00108, § 371 Date Jan. 27, 2000, § 102(e) Date Jan. 27, 2000, PCT Pub. No. WO98/40440, PCT Pub. Date Sep. 17, 1998

PCT Filed Mar. 5, 1998, Appl. No. 380,782

Claims priority, application Israel, Mar. 9, 1997, 120399

Int. Cl. C09D *5/08;* **C08K** *5/17;5/5399*

U.S. Cl. 106—14.37 **14 Claims**

1. A paint and/or coating composition comprising an anti-corrosive composition wherein said anti-corrosive composition comprises at least one oxyaminophosphate pigment and at least one oxynitrite, oxymetalphosphate, oxyborate or oxysilicate.

US 6,331,203 B2

AQUEOUS INK COMPOSITION FOR BALL-POINT PEN

Katsuya Hattori; Akio Nakamura, and Mikio Morishita, all of Kawagoe, Japan, assignors to Kotobuki & Co., Ltd., Kyoto, Japan

Division of application No. 09/383,980, filed on Aug. 26, 1999. This application Apr. 30, 2001, Appl. No. 843,920.

Claims priority, application Japan, Mar. 17, 1999, 11-71712; Aug. 5, 1999, 11-223113

Int. Cl. C09D *11/00;* **C08L** *1/00*

U.S. Cl. 106—31.13 **45 Claims**

1. An aqueous ink for a ball-point pen, comprising:

a pigment;

a water-soluble organic solvent;

water;

xanthane gum; and

an ionic polysaccharide other than xanthane gum,

wherein said xanthane gum and said ionic polysaccharide are balanced such that said aqueous ink has high stability over time, high pigment dispersion stability, and proper, viscosity.

US 6,331,204 B1

PRINTING INK COMPOSITION

Kathryn Carr, Preston; Mark Holbrook, Ramsbottom Bury, and Ian Ferguson, Todmorden, all of United Kingdom, assignors to Avecia Limited, Manchester, United Kingdom

Continuation of application No. 08/750,347, filed as application No. PCT/GB95/01122, filed on May 18, 1995, now Pat. No. 5,972,544. This application Aug. 2, 1999, Appl. No. 366,218.

Claims priority, application United Kingdom, Jun. 9, 1994, 9411586

Int. Cl. C09D *11/10*

U.S. Cl. 106—31.27 **9 Claims**

1. An ink comprising

(a) one or more cross-linkable polymer precursor(s) selected from cross-linkable forms of:

acrylamides, epoxides, epoxy resins, acrylamide/epoxy resin systems, melamine formaldehyde resin condensates, polyesters, alkyd resins, hydroxylated or carboxylated acrylics, hydroxylated acrylic-melamine formaldehyde systems; and

(b) one or more dye(s) having at least one substituent capable of forming a covalent bond with a group of at least one of the polymer precursor(s) and where each substituent is attached to the dye either directly or via optionally substituted alkyl or aryl groups; the substituents being selected from: —OH; —NH_2, —NHalkyl; —SH; —COOH, —COOalkyl; epoxy; — COalkenyl; and —NHCOalkenyl;

(c) a liquid medium comprising water or an organic liquid or a mixture thereof; and

(d) a surfactant.

US 6,331,205 B1

AQUEOUS VISCOUS COMPOSITIONS, WHETHER CLEAR OR NOT, FOR MAKING SOFT OR HARD CAPSULES, AND METHOD FOR MAKING FILMS FOR SUCH CAPSULES

Laurence Paris, 24, rue du Progres, F-03600 Commentry, France, and Fabrice Viaud, La Tessoualle, France, assignors to Laurence Paris, Commentry, France

PCT No. PCT/FR98/01744, § 371 Date Dec. 6, 1999, § 102(e) Date Dec. 6, 1999, PCT Pub. No. WO99/07347, PCT Pub. Date Feb. 18, 1999

PCT Filed Aug. 5, 1998, Appl. No. 403,647

Claims priority, application France, Aug. 8, 1997, 97 10190

Int. Cl. C09D *105/00;* **C08J** *5/00;* **A61K** *9/48*

U.S. Cl. 106—205.9 **25 Claims**

1. A viscous aqueous composition for making soft or hard capsules for aqueous and oily solutions, the composition comprising an aqueous medium and a single gelling agent consisting of an iota carrageenan, the concentration of the iota carrageenan being at least 5% of the aqueous medium, the composition further comprising at least one ion selected from the group consisting of the alkaline and alkaline earth ions.

US 6,331,206 B1

LACQUER COMPOSITION

Ytsen Wielstra, and Jolanda H. S. Winkel, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 21, 1997, Appl. No. 976,518

Claims priority, application European Pat. Off., Nov. 22, 1996, 96203288

Int. Cl. C09D *183/06*

U.S. Cl. 106—287.13 **48 Claims**

1. A lacquer composition which comprises the product of a treatment of a mixture of an organosilane compound with water in the presence of a substance which functions as a catalyst and as a crosslinking agent, which organosilane compound comprises at least two hydrolytically-condensable silane substituents, and at least one non-hydrolytically -condensable silane substituent which contains a hydroxy or hydrolyzable group bonded to a carbon atom, said substance reacting with at least one said non-hydrolytically condensable silane substituent to form an ester group, and being selected from the group consisting of (i) a polycarboxylic acid which is stable in contact with water and (ii) an anhydride which hydrolyzes to form said polycaboxylic acid,

with the proviso that when said at least one non-hydrolytically condensable silane substituent is an epoxy group, at the beginning of the treatment, the mixture has a pH in the range of 0 to 4.

US 6,331,207 B1

METHOD OF TREATING CEMENT KILN DUST FOR RECOVERY AND RECYCLE

Ronald Frank Gebhardt, 6253 Venture Ct., Slatington, Pa. 18080

Filed Feb. 10, 1999, Appl. No. 247,903

Int. Cl. C04B *7/24;7/26*

U.S. Cl. 106—751 **19 Claims**

1. A method for treating cement kiln dust for return to the cement-making process, such method consisting of:

a. mixing kiln dust with water such that the ratio of dust to water is greater than 1:5;

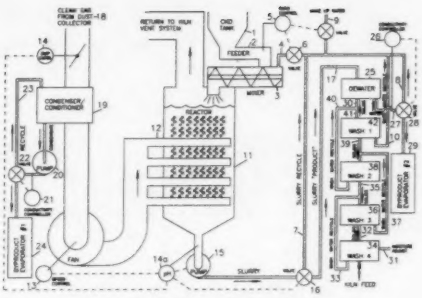
b. treating the mixture with carbon dioxide;

c. controlling the amount of carbonation, using pH of the slurry, to maximize retention of calcium in the kiln dust solids and to maximize dissolution and removal of alkalies and sulfate;

d. separating the resulting slurry into moist solids and brine;

e. washing the solids with water to remove interstitial brine;

f. recycling the wash water to the process;



CEMENT KILN DUST RECOVERY AND RECYCLE SYSTEM

g. returning the solids to the cement-making process as kiln feed; and

h. treating the separated brine for recovery of byproduct alkalies by direct use of the brine; by concentration of the brine by evaporation or reverse osmosis; or by recovery of salts by precipitation, evaporation, or crystallization.

US 6,331,208 B1

PROCESS FOR PRODUCING SOLAR CELL, PROCESS FOR PRODUCING THIN-FILM SEMICONDUCTOR, PROCESS FOR SEPARATING THIN-FILM SEMICONDUCTOR, AND PROCESS FOR FORMING SEMICONDUCTOR

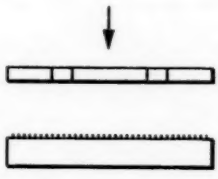
Shoji Nishida, Hiratsuka; Takao Yonehara, Atsugi; Kiyofumi Sakaguchi, Yokohama, and Masaaki Iwane, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1999, Appl. No. 310,954

Claims priority, application Japan, May 15, 1998, 10-133913; May 15, 1998, 10-133915

Int. Cl. C30B *25/18;* **H01L** *21/02*

U.S. Cl. 117—89 **34 Claims**



1. A process for producing a solar cell making use of an epitaxial film grown on a silicon wafer, the process comprising the steps of:

i) forming a porous layer on one-side surface of the silicon wafer by anodizing;

ii) growing at least one semiconductor layer on the porous layer by epitaxial growth;

iii) forming a semiconductor junction on the surface of the semiconductor layer;

iv) providing openings in the semiconductor layer, each of the openings extending from the surface of the semiconductor layer and reaching the porous layer; and

v) removing the porous layer by etching through the openings to separate the semiconductor layer from the silicon wafer.

US 6,331,209 B1

METHOD OF FORMING CARBON NANOTUBES

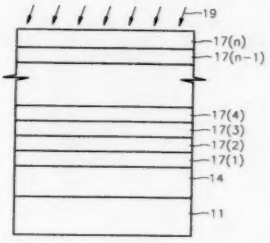
Jin Jang, 102-1103 Hyundai Apt., 53 Jamwon-dong, Seocho-gu, Seoul, and Suk-jae Chung, Seoul, both of Rep. of Korea, assignors to Jin Jang, and Iljin Nanotech Co., Ltd., both of Rep. of Korea

Filed Apr. 21, 2000, Appl. No. 556,816

Claims priority, application Rep. of Korea, Apr. 21, 1999, 99-14306; Apr. 14, 2000, 00-19559

Int. Cl. C30B *25/18*

U.S. Cl. 117—90 13 Claims



1. A method of forming carbon nanotube, in which a carbon nanotube layer is grown on a substrate using a plasma chemical vapor deposition method at a high plasma density of 10^{11} cm^{-3} or more.

US 6,331,210 B1

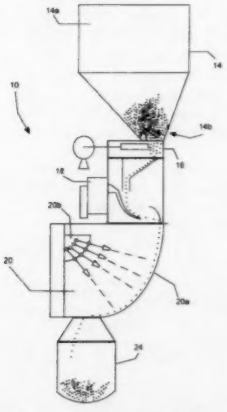
SELF-CLEANING SPRAY CHAMBER FOR LIVESTOCK AND POULTRY FEED PELLET PROCESSING SYSTEM

James W. Dodd, Alpharetta, Ga., assignor to AGR International, Inc., Roswell, Ga.

Provisional application No. 60/116,601, filed on Jan. 20, 1999. This application Jan. 19, 2000, Appl. No. 487,009.

Int. Cl. B05C *5/02*

U.S. Cl. 118—303 14 Claims



1. An apparatus for applying liquid additives to a flow of feed pellets, comprising:

a spray chamber having a canted side wall opposing at least one spray nozzle configured to direct a spray stream of at least one liquid additive toward the side wall; and

a dry mass flow meter that directs the flow of the pellets from a discharge end of the meter against the side wall such that the pellet flow frictionally travels along the wall in confluence with the spray stream before being discharged from the side wall at a discharge end.

US 6,331,211 B1

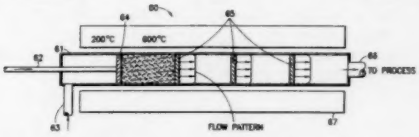
METHOD AND APPARATUS FOR FORMING LOW DIELECTRIC CONSTANT POLYMERIC FILMS

Chongying Xu, New Milford; Thomas H. Baum, New Fairfield, both of Conn.; Ralph J. Carl, Carmel, N.Y., and Edward A. Sturm, New Milford, Conn., assignors to Advanced Technology Material, Inc., Danbury, Conn.

Division of application No. 09/157,966, filed on Sep. 21, 1998, now Pat. No. 6,123,993. This application Aug. 10, 2000, Appl. No. 635,866.

Int. Cl. C23C *16/00*

U.S. Cl. 118—719 12 Claims



1. A parylene film growth system for forming a parylene film on a substrate, said system comprising:

a supply of a precursor comprising a parylene source reagent;

a flash vaporizer and pyrolytic cracking unit for flash vaporizing the precursor to form flash vaporized precursor and pyrolytically cracking the flash vaporized precursor to yield a precursor vapor including a parylene source monomer and/or reactive radical species;

means for flowing the precursor from the supply thereof to the flash vaporizer and pyrolytic cracking unit, for flash vaporization therein to form the flash vaporized precursor and pyrolytic cracking of the flash vaporized precursor to form precursor vapor including the parylene source monomer and/or reactive radical species;

a contacting chamber constructed to hold a substrate therein for contacting with the precursor vapor; and

means for flowing the precursor vapor from the flash vaporizer and pyrolytic cracking unit to the contacting chamber for contact of the precursor vapor with the substrate under conditions producing condensation of the parylene-source monomer and/or reactive radical species to form a polymeric film of parylene on the substrate.

US 6,331,212 B1

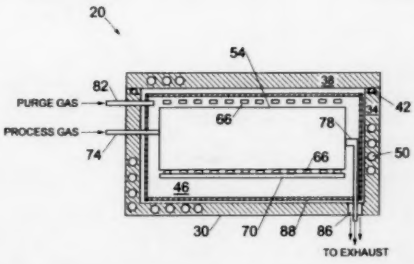
METHODS AND APPARATUS FOR THERMALLY PROCESSING WAFERS

James J. Mezey, Sr., San Jose, Calif., assignor to Avansys, LLC, Tempe, Ariz.

Filed Apr. 17, 2000, Appl. No. 550,888

Int. Cl. C23C *16/00*

U.S. Cl. 118—725 30 Claims



1. An apparatus for thermally processing a semiconductor wafer, the apparatus comprising:

a housing, the housing having a port for loading and unloading the wafer, the housing having a purge gas inlet port and a purge gas exit port for flowing a purge gas through the housing;

a process chamber contained in the housing, the process chamber having a port for loading and unloading the wafer, the process chamber comprising a wafer support for holding the wafer;

a plurality of heating elements disposed within the housing, the heating elements being arranged so as to apply heat to the exterior of the process chamber;

at least one heat shield disposed between at least one of the heating elements and the housing;

a temperature control system for controlling the heating elements to substantially maintain the wafer at a thermal processing temperature; and

wherein the process chamber includes a preprocess zone and a process zone, the temperature control system being capable of independently controlling preselected temperatures for the preprocess zone and the process zone so that each zone can be maintained at an independent temperature.

US 6,331,213 B1

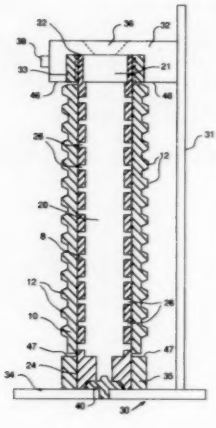
BRUSH ALIGNMENT METHOD

Shon Brunelli; Timothy Kennedy, both of Boise, and Bryan Ludwig, Meridian, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Division of application No. 09/055,720, filed on Apr. 6, 1998, now Pat. No. 6,076,217. This application Jan. 11, 2000, Appl. No. 481,052.

Int. Cl. B08B *7/00*

U.S. Cl. 134—6 **19 Claims**



13. A method of cleaning a semiconductor wafer comprising:

mounting a brush onto a roller such that an inner surface of the brush and an outer surface of the roller are in frictional contact with one another;

creating a layer of fluid between the surfaces of the roller and the brush to substantially dissipate said frictional contact between the brush and the roller;

maintaining the layer of fluid between the surfaces of the roller and the brush to allow the brush to attain a position of static alignment with the outer surface of the roller;

eliminating the layer of fluid to return the brush to a position of frictional contact with the outer surface of the roller, while substantially retaining the position of static alignment;

bringing a surface of a semiconductor wafer into frictional contact with the brush to clean the surface of the semiconductor wafer; and

rotating the semiconductor wafer about its center.

US 6,331,214 B1

MONOLITHICALLY BONDED CONSTRUCT OF RARE-EARTH MAGNET AND METAL MATERIAL AND METHOD FOR BONDING SAME

Masaki Koga, Yokohama; Nobutaka Suzuki; Hitoshi Saitoh, both of Tokyo; Kenshiro Oyamada, Chiba; Koki Tokuhara; Shuji Mino, both of Hyogo; Naoyuki Ishigaki, Shiga, and Hitoshi Yamamoto, Chiba, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, and Sumitomo Special Metals Co., LTD, Osaka, both of Japan

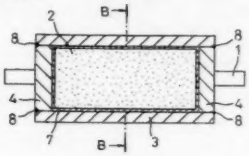
PCT No. PCT/JP98/00198, § 371 Date Nov. 20, 1998, § 102(e) Date Nov. 20, 1998, PCT Pub. No. WO98/31497, PCT Pub. Date Jul. 23, 1998

PCT Filed Jan. 20, 1998, Appl. No. 155,094

Claims priority, application Japan, Jan. 20, 1997, 9-007152

Int. Cl. H01F *1/053*

U.S. Cl. 148—101 **20 Claims**



1...Shaft
2...Rare-earth magnet
3...Metal cylinder
4...Metal disk
7...Intermediate member

1. A monolithically bonded construct of a rare-earth magnet and a metal material, comprising a rare-earth magnet and high melting point metal monolithically bonded together through solid phase diffusion bonding by a hot isostatic pressing treatment,

wherein said high melting point metal is selected from the group consisting of tantalum (Ta), molybdenum (Mo), tungsten (W), vanadium (V), niobium (Nb), zirconium (Zr) and hafnium (Hf).

US 6,331,215 B1

PROCESS FOR PRODUCING GRAIN-ORIENTED ELECTROMAGNETIC STEEL SHEET

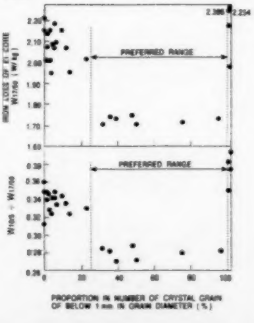
Tetsuo Toge; Michiro Komatsubara; Atsuhito Honda; Kenichi Sadahiro, and Kunihiro Senda, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Japan

Division of application No. 08/954,504, filed on Oct. 20, 1997, now Pat. No. 6,039,818. This application Jan. 28, 2000, Appl. No. 493,864.

Claims priority, application Japan, Oct. 21, 1996, 8-278136; Oct. 29, 1996, 8-286720; Nov. 8, 1996, 8-313098

Int. Cl. H01F *1/04*

U.S. Cl. 148—111 **16 Claims**



1. A process for production of a grain-oriented electromagnetic steel sheet having a low ratio of iron loss in a weaker magnetic

field to that in a stronger magnetic field, which comprises:

casting molten steel into a silicon steel slab, said molten steel comprising about,

C: 0.005 to 0.070% by weight,

Si: 1.5 to 7.0% by weight,

Mn: 0.03 to 2.5% by weight,

Al: 0.005 to 0.017% by weight and

N: 0.0030 to 0.0100% by weight,

said molten steel further including at least one member selected from the group consisting of,

Ti: about 0.0005 to 0.0020% by weight,

Nb: about 0.0010 to 0.010% by weight,

B: about 0.0001 to 0.0020% by weight and

Sb: about 0.0010 to 0.080% by weight,

subjecting said slab to hot rolling by heating at a temperature of lower than about 1,250° C., or to direct hot rolling;

the outlet temperature of finish hot rolling being in the range of about 800 to 970° C., followed by quenching said steel sheet at a cooling speed of above about 10° C./sec and by subsequent winding of said steel sheet in coiled form at a temperature of lower than about 670° C.:

annealing the resultant sheet while said resultant sheet is being maintained at a temperature of about 800 to 1,000° C. for a period of shorter than about 100 seconds with a temperature rise of about 5 to 25° C./sec;

cold-rolling said annealed sheet at a reduction of about 80 to 95% with use of a tandem rolling mill:

decarburization-annealing said cold-rolled sheet with a ratio of partial steam pressure to partial hydrogen pressure ((P(H2O)/P(H2)) below about 0.7 in the course of constant heating and with P(H2O)/P(H2) lower in the course of temperature rise than in said constant heating;

coating an annealing separator on to said decarburization-annealed sheet, said separator containing a Ti compound in an amount of about 1 to 20% by weight and B in an amount of about 0.04 to 1.0% by weight; and

subsequently finish annealing said coated sheet while said coated sheet is being subjected to a temperature rise in a hydrogen-containing atmosphere at at least above about 850° C.

US 6,331,216 B1

STEEL PIPE HAVING HIGH DUCTILITY AND HIGH STRENGTH AND PROCESS FOR PRODUCTION THEREOF

Takaaki Toyooka; Akira Yorifuji; Masanori Nishimori; Motoaki Itadani; Yuji Hashimoto; Takatoshi Okabe; Nobuki Tanaka; Taro Kanayama, all of Aichi; Osamu Furukimi, Chiba; Masahiko Morita, Okayama; Takaaki Hira, Chiba, and Saiji Matsuoka, Okayama, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

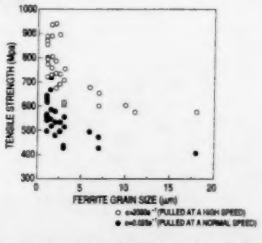
PCT No. PCT/JP98/01924, § 371 Date Dec. 30, 1998, § 102(e) Date Dec. 30, 1998, PCT Pub. No. WO98/49362, PCT Pub. Date Nov. 5, 1998

PCT Filed Apr. 27, 1998, Appl. No. 214,226

Claims priority, application Japan, Apr. 30, 1997, 9-112247; May 15, 1997, 9-125206; Jul. 22, 1997, 9-196038; Aug. 25, 1997, 9-228579

Int. Cl. C21D *7/13;* **C22C** *38/04*

U.S. Cl. 148—320 **20 Claims**



1. A steel pipe having high ductility and high strength which is characterized by an average grain size not greater than 3 μm in the cross section perpendicular to its lengthwise direction and by a structure composed mainly of ferrite or ferrite plus pearlite or ferrite plus cementite, having an elongation of 20% or more produced by working and a tensile strength (TS:MPa) and elongation (EL:%) whose product TS×El is 20,000 or more and containing 0.2–1.3 wt % of Mn.

US 6,331,217 B1

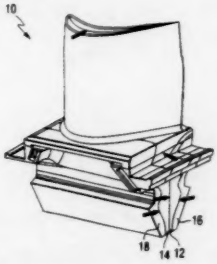
TURBINE BLADES MADE FROM MULTIPLE SINGLE CRYSTAL CAST SUPERALLOY SEGMENTS

Michael A. Burke, Pittsburgh; Paula D. Freyer, Cranberry Township, both of Pa.; Mohan A. Hebbar, Oviedo; Brij B. Seth, Maitland, both of Fla.; Gary W. Swartzbeck, North Huntingdon, Pa., and Thomas Walter Zagar, Winter Springs, Fla., assignors to Siemens Westinghouse Power Corporation, Orlando, Fla.

Provisional application No. 60/063,640, filed on Oct. 27, 1997. This application Jul. 6, 2000, Appl. No. 509,600.

Int. Cl. C22F *1/10;* **F01D** *5/12*

U.S. Cl. 148—522 **20 Claims**



1. A method of manufacturing a turbine blade for a land based turbine comprising the steps of:

selecting a single crystal superalloy for forming the turbine blade;

selecting a plurality of segments of the turbine blade to be formed by a plurality of individual castings of the superalloy, the location of the segments being selected to place joints between adjacent segments at locations of reduced stress;

forming the segments by casting the superalloy in a plurality of molds;

joining the segments by transient liquid phase bonding; and

precipitation heat treating the bonded segments.

US 6,331,218 B1

HIGH STRENGTH AND HIGH RIGIDITY ALUMINUM-BASED ALLOY AND PRODUCTION METHOD THEREFOR

Akihisa Inoue, 11-806 Kawauchi-jutaku, Kawauchi, Aoba-ku, Sendai-shi, Miyagi-ken; Hisamichi Kimura, Watari-gun, and Yuma Horio, Hamamatsu, all of Japan, assignors to Tsuyoshi Masumoto, and Akihisa Inoue, both of Tokyo, Japan

Division of application No. 08/856,200, filed on May 14, 1997, now Pat. No. 5,858,131, which is a continuation-in-part of application No. 08/550,753, filed on Oct. 31, 1995, now abandoned. This application Sep. 29, 1998, Appl. No. 162,747. Claims priority, application Japan, Nov. 2, 1994, 6-270062

This patent is subject to a terminal disclaimer.

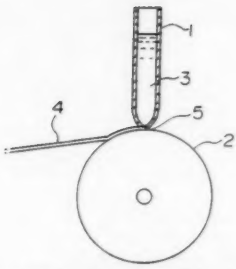
Int. Cl. C22C *21/00*

U.S. Cl. 148—561 **5 Claims**

1. A production method for an aluminum-based alloy comprising the steps of:

a) selecting an element Q, which is at least one element selected from the group consisting of V, Mo, Fe, W, Nb, and Pd;

b) selecting an element M, which is at least one element having an atomic radius which is more than 0.01 Å larger or smaller



than the atomic radius of said element Q and which is selected from the group consisting of Mn, Fe, Co, Ni, and Cu;

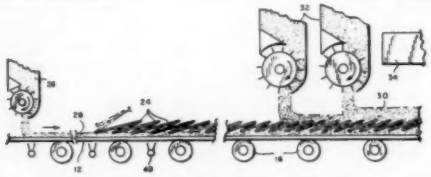
c) preparing a liquid-melt consisting essentially of Al having an amount in atomic percentage of 100–(a+b), said element Q having an amount in atomic percentage of a and said element M having an amount in atomic percentage of b, wherein said a and b satisfy the relationships $1 \leqq a \leqq 8$, $0 < b < 5$, and $3 \leqq a+b \leqq 8$, said liquid-melt not containing rare earth elements; and

d) quick-quenching said liquid-melt to obtain a solidified aluminum-based alloy having a metallographic structure incorporating a quasi-crystalline phase.

US 6,331,219 B1
RETARDED COOLING SYSTEM WITH GRANULAR INSULATION MATERIAL

T. Michael Shore, Princeton, and Melicher Puchovsky, Dudley, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Provisional application No. 60/103,657, filed on Oct. 9, 1998.
This application Sep. 8, 1999, Appl. No. 392,112.
Int. Cl. B21B *43/00*
U.S. Cl. 148—589 **13 Claims**



1. A method of cooling a hot rolled steel product at a retarded cooling rate, said method comprising:

forming the product into a continuous series of rings;

depositing said rings on a conveyor at a receiving station and transporting said rings in a non-concentric overlapping pattern from said receiving station through a cooling zone to a reforming station where the rings are delivered from the conveyor and gathered into upstanding coils; and

embedding the rings being transported through said cooling zone in a layer of granular insulation material.

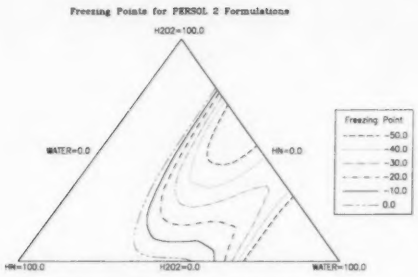
US 6,331,220 B1
GAS-GENERATING LIQUID COMPOSITIONS (PERSOL 2)

Kerry L. Wagaman, Bryantown, Md., assignor to The United States of America as represented by the Secretary of the Department of the Navy, Washington, D.C.

Filed Nov. 23, 1999, Appl. No. 447,272
Int. Cl. C06B *31/00*
U.S. Cl. 149—45 **22 Claims**

1. A water-based gas-generating liquid, comprising:

hydrogen peroxide;



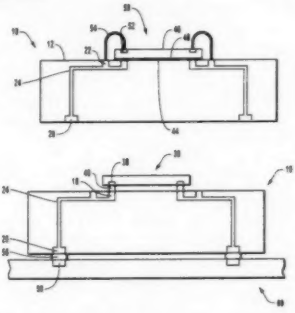
hydrazinium mononitrate; and

water.

US 6,331,221 B1
PROCESS FOR PROVIDING ELECTRICAL CONNECTION BETWEEN A SEMICONDUCTOR DIE AND A SEMICONDUCTOR DIE RECEIVING MEMBER

Chad Cobbley, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Division of application No. 09/060,740, filed on Apr. 15, 1998.
This application Aug. 3, 1999, Appl. No. 368,248.
Int. Cl. H01L *23/48*
U.S. Cl. 156—60 **14 Claims**



1. A process for providing electrical connection between a semiconductor die and a semiconductor die receiving member, said process comprising:

providing said semiconductor die receiving member, wherein said semiconductor die receiving member is capable of receiving a respective semiconductor die which can be mounted either through flip-chip mounting or wirebonding and includes:

a plurality of first contact sites configured to lie underneath said semiconductor die when said semiconductor die is proximate said die receiving member; and

a plurality of second contact sites configured to lie adjacent said semiconductor die when said semiconductor die is proximate said die receiving member, each first contact site of said plurality of first contact sites being in electrical connection with an adjacent second contact site of said plurality of second contact sites;

providing said semiconductor die, wherein said semiconductor includes a first face, an opposite second face, and a plurality of bond pads on said first face capable of flip-chip mounting or wirebonding; and

mounting said semiconductor die onto said semiconductor die receiving member in one of:

flip-chip mounting, wherein said flip-chip mounting comprises:

disposing said first face proximate said die receiving member; and

electrically connecting each of said plurality of bond pads with a corresponding first contact site of said plurality of first contact sites; and

wirebonding, wherein said wirebonding comprises:

disposing said second face proximate said die receiving member; and

electrically connecting each of said plurality of bond pads with a corresponding second contact site of said plurality of second contact sites.

US 6,331,222 B1

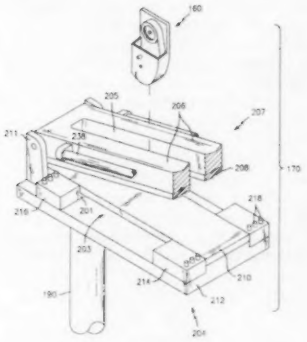
SPLICER FOR JOINING THIN SHEETS

Peter D. Hotkowski, Chester; Frank A. Todaro, Old Saybrook; Daniel J. Williams, Westbrook; Peter C. Burton, East Haddam, and Brian C. Richardson, Bozrah, all of Conn., assignors to Asterisk, Inc., Old Saybrook, Conn.

Provisional application No. 60/063,986, filed on Nov. 6, 1997. This application Nov. 6, 1998, Appl. No. 187,376.

Int. Cl. B31F *5/06;* **B65H** *19/18;21/00*

U.S. Cl. 156—157 **11 Claims**



1. A splicer, for joining together the ends of two sheets by means of a tape, which comprises:

(a) a clamp assembly comprised of

a base, having a length, a front end, and a rear end; a first layer of resilient material running along the length of the top surface of the base, the layer having a first width; and,

a top, comprised of two spaced apart bars defining a lengthwise slot therebetween, the slot having a width less than said first width; two second layers of resilient material, one each running along the length of the bottom; the top movably positionable with respect to the base for engagement and disengagement;

wherein, when the top is moved to engagement with the base, so the bottom surface of the top and the top surface of the base are in proximity, the slot is centered over the base, so said first layer is aligned with and opposingly mated with the pair of second layers, wherein when the ends of two sheets are butted together and laid on the surface of the base, the ends of the two sheets will be frictionally captured between the mating first and second layers, to define a butt line; and,

(b) a dispenser, for applying a layer of tape to form a joint between the ends of sheets which are butted together and held within said clamp assembly, the dispenser fitting within said slot and movable along the length thereof; wherein, when the dispenser is moved on a travel path running lengthwise along the length of the slot, the dispenser lays a layer of tape along said butt line between sheets captured between the mated top and base, to thereby form a taped joint between the sheets; wherein, the dispenser presses on the tape as the tape is progressively laid down.

US 6,331,223 B1

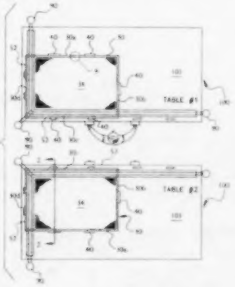
METHOD OF FABRICATING ADHESIVELY SECURED FRAME ASSEMBLY

Douglas H. Wylie, Waterdown; John Szabo, Pickering, and Saj Ravindran, Toronto, all of Canada, assignors to Saint-Gobain Bayform America, Inc., Cadiz, Ohio

Continuation of application No. 08/997,737, filed on Dec. 24, 1997, now Pat. No. 6,279,644. This application Aug. 23, 1999, Appl. No. 379,102.

Int. Cl. B32B *31/00;* **E06B** *9/00*

U.S. Cl. 156—160 **52 Claims**



1. A method for securing a screen to a screen bar segment, comprising the steps of:

(a) providing a screen bar segment having a mounting surface on a face thereof, the segment having adhesive on the mounting surface;

(b) spreading the screen across the mounting surface of the screen bar segment;

(c) melting the adhesive;

(d) pushing the screen with a plurality of pins so the screen contacts the adhesive across a length of the screen bar segment.

US 6,331,224 B1

METHOD FOR MANUFACTURING CARBON SHEET

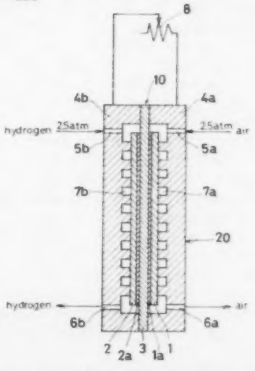
Hideo Seko, Gifu-ken; Hikaru Okamoto, and Masami Ishii, both of Aichi-ken, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 26, 1999, Appl. No. 383,195

Claims priority, application Japan, Aug. 26, 1998, 10-240743; Aug. 26, 1998, 10-240745; Jul. 28, 1999, 11-213508

Int. Cl. D01F *9/12;* **H01M** *4/88;4/96*

U.S. Cl. 156—181 **15 Claims**



1. A method for manufacturing a carbon sheet, comprising the steps of:

forming a sheet by mixing carbon fibers and a bonding agent;

drying the formed sheet;

immersing the dried formed sheet in a water repellent material particle dispersed dilute solution;

extracting the formed sheet from the water repellent material particle dispersed dilute solution;

baking the formed sheet at a temperature below 500° C. for fixing water repellent material particles thereon contained in the water repellent material particle dispersed dilute solution; and

oxidizing the bonding agent at a temperature below 500° C. for removing the same from the formed sheet during the baking step.

US 6,331,225 B1

APPARATUS AND METHOD FOR MOUNTING ELECTRONIC PARTS

Osamu Sugiyama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

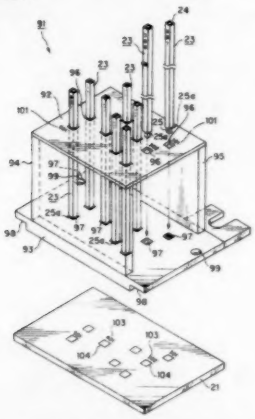
PCT No. PCT/JP98/02164, § 371 Date Apr. 19, 1999, § 102(e) Date Apr. 19, 1999, PCT Pub. No. WO98/52399, PCT Pub. Date Nov. 19, 1998

PCT Filed May 15, 1998, Appl. No. 147,508

Claims priority, application Japan, May 16, 1997, 9-126572; Jun. 6, 1997, 9-149597; Oct. 7, 1997, 9-274155; Oct. 13, 1997, 9-278545; Oct. 13, 1997, 9-278546

Int. Cl. H05K *13/02;3/00*

U.S. Cl. 156—299 **14 Claims**



1. A mounting apparatus for electronic parts comprising:

a plurality of loading members for electronic parts, each having a loading through-hole extending in the up-and-down direction for loading plural electronic parts to be mounted on a printed circuit board, and a detachment preventative mechanism for prohibiting incidental descent of the electronic parts from the loading through-hole, the electronic parts being loaded in a stacked state in groups of the same sorts;

a loading unit for loading electronic parts in said plurality of loading members by insertion into said through-hole and including a supporting unit for supporting a single electronic part that was last inserted into the loading through-hole of the loading member so that the last-inserted electronic part is positioned at an optimum loading position in the vicinity of an opening end of the loading through-hole;

a loading member furnishing casing in which is arranged at least a set of loading members for electronic parts each accommodating at least a set of electronic parts to be loaded on the printed circuit board;

a loading member holder having a plurality of holding portions each holding one of said set of the electronic parts arrayed and held in said loading member furnishing casing; and

an electronic part loading device for mounting electronic parts on the printed circuit board and having said loading member holder mounted therein, said electronic part loading device including a plurality of extruder members arranged for being inserted via upper opening ends of said loading through-holes of said loading members for electronic parts held by said loading member holder and an extruder member descent control mechanism adapted for controlling the descent by the self-gravity of these extruder members and for annulling the controlled state to permit descent of the extruder members;

said extruder members descending by their own weight through the insides of the loading through-holes when said extruder member descent control mechanism enables descent of said loading through-holes to eject the electronic parts from the loading members for electronic parts via lower end openings in order to put the electronic parts at pre-set positions on the printed circuit board arranged below said loading member, wherein:

said loading member holder carries identification symbols in association with plural holding portions provided on the holder and wherein said loading members for electronic parts are each provided with identification symbols associated with the identification symbols provided in each holding portion,

the identification symbols provided on said loading members for electronic parts are numerical figures or letters indicating the arraying sequence of the plural holding portions and wherein the identification symbols provided on the loading members for electronic parts are numerical figures or letters associated with the numerical figures or symbols indicating the numerical figures or symbols specifying the arraying sequence of the plural holding portions, and

the loading member furnishing casing has a series of identification symbols comprised of numerical figures or letters associated with the numerical figures or letters specifying the arraying sequence of the plural holding portions, said at least one set of the loading members for electronic parts being arrayed in said loading member furnishing casing with the identification symbols of the loading members for electronic parts in agreement with the numerical figures or letters provided on said loading member furnishing casing.

US 6,331,226 B1

LCP BONDING METHOD

Yasuo Imashiro; Hideshi Tomita; Takahiko Itoh, and Norimasa Nakamura, all of Chiba, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

Filed May 25, 2000, Appl. No. 577,395

Claims priority, application Japan, Jun. 1, 1999, 11-153878

Int. Cl. C09J *163/02*

U.S. Cl. 156—330 **5 Claims**

1. A method for bonding LCPs mutually or an LCP and another material comprising the step of bonding the LCPs or LCP and another material using an adhesive prepared by adding a polycarbodiimide resin with an epoxy resin composition comprising an epoxy resin and a curing agent.

US 6,331,227 B1

ENHANCED ETCHING/SMOOTHING OF DIELECTRIC SURFACES

Jerald P. Dykstra, Austin, Tex.; David J. Mount, Sr., North Andover, Mass.; Wesley J. Skinner, Andover, Mass., and Allen R. Kirkpatrick, Lexington, Mass., assignors to Epion Corporation, Billerica, Mass.

Filed Dec. 14, 1999, Appl. No. 461,148

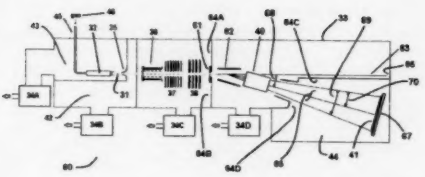
Int. Cl. H01J *37/00*

U.S. Cl. 156—345.1 **42 Claims**

1. A gas cluster ion beam (GCIB) etching apparatus comprising:

a system for producing a gas cluster ion beam utilized to controllably etch a substrate, said gas cluster ion beam initially being directed along a longitudinal axis;

a portion of the GCIB etching apparatus being operably connected to said beam producing system, said portion containing



the substrate to be etched when the substrate is impacted by said gas cluster ion beam;

said portion of the GCIB etching apparatus including means for directing said gas cluster ion beam in a direction offset from said longitudinal axis while permitting unwanted ionizing radiation to remain directed along said longitudinal axis; and

means within said portion of the GCIB etching apparatus for positioning the substrate in line with said offset gas cluster ion beam;

wherein said unwanted ionizing radiation is substantially prevented from impinging upon the substrate during the etching process.

US 6,331,228 B1

PRINTED, SOFT, BULKY SINGLE-PLY ABSORBENT PAPER HAVING A SERPENTINE CONFIGURATION AND LOW SIDEDNESS

Michael S. Heath, Menasha; T. Philips Oriaran; Mark S. Siegel, both of Appleton; Frank D. Harper, and John H. Dwiggins, both of Neenah, all of Wis., assignors to Fort James Corporation, Deerfield, Ill.

Division of application No. 09/075,689, filed on May 11, 1998, now Pat. No. 6,165,319. This application May 10, 2000, Appl. No. 568,664.

This patent is subject to a terminal disclaimer.

Int. Cl. D21H *17/07;* **B31F** *1/07*

U.S. Cl. 162—117 **31 Claims**

1. A soft, printed, embossed, single-ply absorbent paper product which has been printed either before or after embossing, said absorbent paper product having a serpentine configuration and a basis weight of at least about 12.5 lbs/3000 square feet ream and exhibiting low sidedness, said single-ply absorbent paper product formed by wet pressing of a cellulosic web, adhering said web to a Yankee dryer and creping the web from the Yankee dryer, said single-ply absorbent paper product having a Yankee side and an air side an wherein the absorbent paper is printed on thc Yankee side, the air side or both sides of said printed absorbent paper product including

(a) a temporary wet strength agent comprising a wet strength resin selected from the group consisting of: uncharged aldehydes, uncharged aldhehyde resins, polyols and cyclic ureas, mixtures thereof and charged cationic starches having aldehyde moieties, and

(b) a nitrogenous softening agent,

the amount of the temporary wet strength agent added and the nitrogenous softener added being sufficient to produce a single-ply tissue having a specific total tensile strength of between 40 and 200 grams per 3 inches per pound per 3000 square feet ream, a cross direction specific wet tensile strength of between 2.75 and 20.0 grams per 3inches per pound per 3000 square feet ream, the ratio of MD tensile to CD tensile of between 1.25 and 2.75, a specific geometric mean tensile stiffness of between 0.5 and 3.2 grams per inch per percent strain per pound per 3000 square feet ream, a friction deviation of less than 0.250, and a sidedness parameter of less than 0.30.

US 6,331,229 B1

METHOD OF INCREASING RETENTION AND DRAINAGE IN PAPERMAKING USING HIGH MOLECULAR WEIGHT WATER-SOLUBLE ANIONIC OR MONIONIC DISPERSION POLYMERS

Jane B. Wong Shing, Aurora; Chidambaram Maltesh, Naperville, and John R. Hurlock, Hickory Hills, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Sep. 8, 1999, Appl. No. 392,671

Int. Cl. D21H *11/00*

U.S. Cl. 162—168.3 **16 Claims**

1. A method of increasing retention and drainage in a papermaking furnish comprising adding to the furnish from about 0.02 lbs polymer/ton to about 20 lbs polymer/ton of a high molecular weight water-soluble dispersion polymer wherein the dispersion polymer has a bulk Brookfield viscosity of from about 10 to about 25,000 cps at 25° C. and comprises from about 5 to about 50 weight percent of a water-soluble polymer prepared by polymerizing under free radical forming conditions at a pH of from above 5 to about 8 in an aqueous solution of a water-soluble salt in the presence of a stabilizer:

i. 0 to about 30 mole percent of acrylic acid or methacrylic acid or the alkali metal, alkaline earth metal or ammonium salts thereof, and,

ii. 100 to about 70 mole percent of acrylamide;

wherein the stabilizer is an anionic water-soluble copolymer of acrylic acid or methacrylic acid and 2-acrylamido-2-methyl-1-propanesulfonic acid having an intrinsic viscosity in 1M $NaNO_3$ of from about 0.1–10 dl/g and comprises from about 0.1 to about 5 weight percent based on the total weight of the dispersion, and the water-soluble salt is selected from the group consisting of ammonium, alkali metal and alkaline earth metal halides, sulfates, and phosphates and comprises from about 5 to about 40 weight percent based on the weight of the dispersion.

US 6,331,230 B1

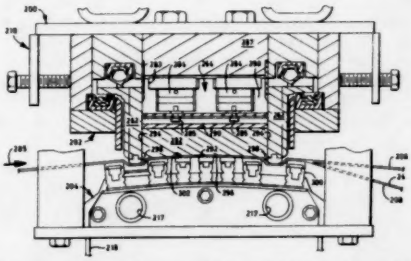
METHOD FOR MAKING SOFT TISSUE

Michael Alan Hermans, Neenah; Mark Alan Burazin; Frank Stephen Hada, both of Appleton, and Sung Ho Hong, Neenah, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Division of application No. 08/961,914, filed on Oct. 31, 1997, now Pat. No. 6,149,767. This application Apr. 24, 2000, Appl. No. 558,002.

Int. Cl. D21F *3/00*

U.S. Cl. 162—207 **17 Claims**



1. A method for making a creped throughdried web, comprising:

(a) depositing an aqueous suspension of papermaking fibers onto an endless forming fabric to form a wet web;

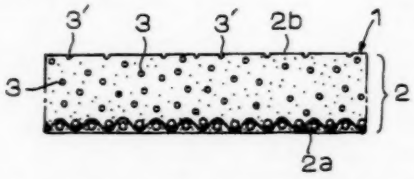
(b) dewatering the wet web to a consistency of about 30 percent or greater using a noncompressive dewatering device comprising an air plenum and a collection device that is adapted to cause a pressurized fluid at about 5 pounds per square inch gauge or greater to flow substantially through the web due to an integral seal formed between said air plenum and said collection device, wherein about 70 percent or greater of the pressurized fluid supplied to the air plenum passes through the wet web;

(c) transferring the wet web to a throughdrying fabric;
(d) throughdrying the noncompressively dewatered web;
(e) transferring the throughdried web onto the surface of a drying cylinder; and
(f) removing the throughdried web from the drying cylinder with a creping blade.

US 6,331,231 B1
WEB TRANSFER BELT AND PRODUCTION PROCESS FOR THE SAME

Kenji Inoue, Ibaraqi-ken, Japan, assignor to Ichikawa Co., Ltd., Tokyo, Japan

Filed Aug. 31, 2000, Appl. No. 652,092
Claims priority, application Japan, Sep. 20, 1999, 11-266386
Int. Cl. D21F *2/00;3/00*
U.S. Cl. 162—358.4 **6 Claims**

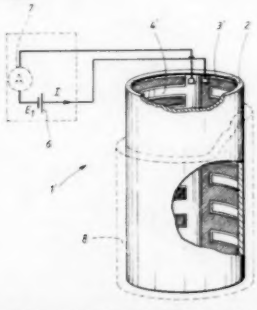


1. A web transfer belt comprising: a high-molecular weight elastic member formed using a resin material mixed with microcapsules, and having a web-receiving face for receiving a web thereon to transfer, upon which web-receiving face there are provided a multitude of recesses having cut-openings of microcapsules, whereby water film to be formed between said web and web-receiving face may be broken by flattening of said web-receiving face under nip pressure and restored at the release of said nip pressure.

US 6,331,232 B1
DEVICE AND METHOD FOR REDUCTION OF OXIDES OF NITROGEN

Staffan Lundgren, Hindås; Edward Jobson, Romelanda; Anders Unosson, Stockholm, and Per Salomonsson, Göteborg, all of Sweden, assignors to Volvo Car Corporation, Sweden

PCT No. PCT/SE97/01338, § 371 Date Mar. 8, 2000, § 102(e) Date Mar. 8, 2000, PCT Pub. No. WO98/07968, PCT Pub. Date Feb. 26, 1998
PCT Filed Aug. 11, 1997, Appl. No. 242,305
Claims priority, application Sweden, Aug. 14, 1996, 9602975
Int. Cl. C25B *9/00;* **C25C** *7/00;* **C25D** *17/00*
U.S. Cl. 204—265 **19 Claims**



1. Apparatus for the reduction of nitrogen oxides in a gas stream comprising:
an oxygen ion conducting substrate,
at least one anode disposed on said substrate,
at least one cathode disposed on said substrate,
a voltage source connected to said anode and said cathode, and
a plurality of plates including a first side and a second side defining a plurality of longitudinally extending ducts for guiding said gas stream, at least one of said first and second sides of said plurality of plates comprising said cathode and the other side of said first and second sides of said plurality of plates comprising said anode, said plurality of plates including at least one pair of adjacent plates, and including at least one of said first and second sides of said at least one pair of said adjacent plates comprising a pair of cathodes facing each other,
said anode and said cathode comprising conductive patterns,
said cathode comprising gold, whereby said nitrogen oxides are adsorbed and dissociated on said cathode, nitrogen may recombine into nitrogen gas on said cathode, and oxygen ions are transported through said substrate from said cathode to said anode.

US 6,331,233 B1
TANTALUM SPUTTERING TARGET WITH FINE GRAINS AND UNIFORM TEXTURE AND METHOD OF MANUFACTURE

Stephen P. Turner, Moon, Pa., assignor to Honeywell International Inc., Morristown, N.J.

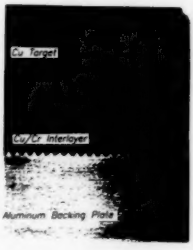
Filed Feb. 2, 2000, Appl. No. 497,079
Int. Cl. C23C *14/34*
U.S. Cl. 204—298.13 **6 Claims**

4. A tantalum sputtering component comprising a mean grain size of less than about 50 microns and a uniform texture that is predominately {111}<uvw> throughout a thickness of the component.

US 6,331,234 B1
COPPER SPUTTERING TARGET ASSEMBLY AND METHOD OF MAKING SAME

Janine K. Kardokus, Otis Orchards; Chi tse Wu, Veradale; Christopher L. Parfeniuk, and Jane E. Buehler, both of Spokane, all of Wash., assignors to Honeywell International Inc., Morristown, N.J.

Continuation of application No. 09/324,299, filed on Jun. 2, 1999, now Pat. No. 6,113,761. This application Jul. 13, 2000, Appl. No. 615,474.
This patent is subject to a terminal disclaimer.
Int. Cl. C23C *14/34*
U.S. Cl. 204—298.13 **15 Claims**

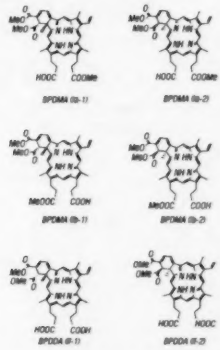


6. An assembly comprising CuCr diffusion bonded between a copper-containing sputtering target and a backing plate.

US 6,331,235 B1
CHIRAL SEPARATION OF BENZOPORPHYRIN DERIVATIVE MONO-AND DI-ACIDS BY LASER-INDUCED FLUORESCENCE CAPILLARY ELECTROPHORESIS

David Dolphin; Xuejun Peng, and Ethan D. Sternberg, all of Vancouver, Canada, assignors to The University of British Columbia, Vancouver, Canada

Provisional application No. 60/111,955, filed on Dec. 11, 1998. This application May 28, 1999, Appl. No. 321,893.
Int. Cl. G02N *27/26*
U.S. Cl. 204—451 **21 Claims**



1. A method of separating stereoisomers of benzoporphyrin derivatives (BPDs) with a capillary electrophoresis system, which method comprises:

selecting the capillary inner diameter, capillary length, field strength, separation temperature, pH, buffer system, ionic strength, chiral selector, and organic solvent of a capillary electrophoresis system to result in separation of BPD stereoisomers,

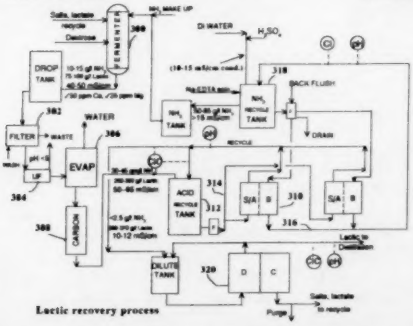
injecting a sample containing said BPD stereoisomers into said capillary electrophoresis system, and

separating said stereoisomers.

US 6,331,236 B1
ELECTRODIALYSIS OF SALTS FOR PRODUCING ACIDS AND BASES

K. N. Mani, Basking Ridge, N.J., assignor to Archer Daniels Midland Company, Decatur, Ill.

Provisional application No. 60/093,558, filed on Jul. 21, 1998. This application Nov. 17, 1998, Appl. No. 193,626.
This patent is subject to a terminal disclaimer.
Int. Cl. B01D *61/44*
U.S. Cl. 204—525 **12 Claims**



1. A process for converting a salt solution feed stream in an electrodialysis cell comprising bipolar membrane and cation selective membrane, said salt solution containing multivalent cation impurities, said process comprising the steps of: (1) adding in said cell a salt solution feed stream to the salt/acid loop and (2) adding a liquid comprising water and a chelating agent to a base product loop in said cell, said base product loop being located between an anion selective side of the bipolar membrane and said cation selective membrane; and (3) taking an acidified salt out put stream from the salt/acid loop and a basified solution from the base loop, said base stream retaining the transported metal valent metals in solution.

US 6,331,237 B1
METHOD OF IMPROVING CONTACT RELIABILITY FOR ELECTROPLATING

Panayotis C. Andricacos, Croton-on-Hudson; W. Jean Horkans, Ossining; Keith T. Kwietniak, Highland Falls; Peter S. Locke, Hopewell Junction, all of N.Y., and Cyprian E. Uzoh, Milpitas, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 1, 1999, Appl. No. 387,856
Int. Cl. C25D *21/06;21/16;5/02*
U.S. Cl. 205—98 **17 Claims**

1. A method of reducing etching of a seed layer by a plating solution, the method comprising:

(a) providing a circuitized semiconductor wafer;

(b) providing a plating tool, comprising:

a plating cell;

a plating solution reservoir;

a supply line for feeding plating solution from the plating solution reservoir to the plating cell;

a return line for feeding plating solution from the plating cell to the plating solution reservoir;

a contact area for providing electrical contact to said wafer and

an inert gas supply for introducing inert gas into the plating solution;

(c) diminishing an etching power of the plating solution prior to exposing the seed layer to the plating solution; and

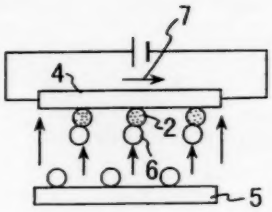
(d) initiating a plating current through said contact area.

US 6,331,238 B1
METHOD OF PATTERNING A SUBSTRATE WITH AN ATOMIC MASK

Takashi Yokoyama, and Masakazu Baba, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of application No. 08/834,030, filed on Apr. 11, 1997, now Pat. No. 6,099,945. This application Jun. 23, 2000, Appl. No. 602,061.
Claims priority, application Japan, Apr. 11, 1996, 8-089738
Int. Cl. C25D *5/02;* **C25F** *3/02;* **B44C** *1/22;* **B05D** *1/28;3/00*
U.S. Cl. 205—135 **44 Claims**

33. A method of patterning a substrate with an atomic mask comprising a mask substrate and first atoms adsorbed on said mask substrate, said first atoms forming a mask pattern having a one-atomic thickness, comprising the steps, in sequence, of:



(a) depositing adatoms over a surface of a substrate to be patterned, said adatoms being composed of atoms which are readily doped into said substrate, said substrate being composed of second atoms;

(b) placing said atomic mask close to said substrate in such a distance that said first atoms form a chemical bond with said adatoms, so that adatoms located nearest to said first atoms are desorbed out of said substrate to form a pattern on said substrate, said pattern being defined as an area where none of said adatoms exists; and

(c) causing said adatoms to diffuse into said substrate.

34. The method as set forth in claim **33**, wherein a current is applied to said mask pattern during said step (b).

US 6,331,239 B1

METHOD OF ELECTROPLATING NON-CONDUCTIVE PLASTIC MOLDED PRODUCTS

Hideki Shirota, Kyoto, and Jun Okada, Osaka, both of Japan, assignors to Okuno Chemical Industries Co., Ltd., Osaka, Japan

PCT No. PCT/JP97/01187, § 371 Date Nov. 20, 1998, § 102(e) Date Nov. 20, 1998, PCT Pub. No. WO98/45505, PCT Pub. Date Oct. 15, 1998

PCT Filed Apr. 7, 1997, Appl. No. 147,292

Int. Cl. C25D *5/56;* **C23C** *28/02*

U.S. Cl. 205—167 **5 Claims**

1. A method of electroplating non-conductive plastic moldings, the method comprising the steps of: applying a catalyst useful for electroless plating to non-conductive plastic moldings using a colloidal solution containing a precious metal compound and a stannous compound; forming an electrically conductive coating on the surface of the moldings using an electroless copper plating solution consisting essentially of a copper compound, a reducing agent consisting of at least one saccharide having a reducing property, a complexing agent and an alkali metal hydroxide; and electroplating the coated moldings

wherein the electroless copper plating solution has a pH of 10 to 14 and the reducing agent is contained in the electroless copper plating solution in amounts sufficient to function as a reducing agent.

US 6,331,240 B1

TIN-INDIUM ALLOY ELECTROPLATING SOLUTION

Kyoko Tsunoda, Street 6-8-110, Yamazaki-Danchi 2130, Yamazaki-cho, Machida Tokyo, Japan, and Takaaki Tamura, 5-37-3-405 Matsumoto-cho Kanagawa-ku, Yokohama Kanagawa, Japan

Filed Sep. 15, 2000, Appl. No. 663,447

Claims priority, application Japan, Jan. 17, 2000, 12-010288

Int. Cl. C25D *3/60*

U.S. Cl. 205—254 **10 Claims**

1. A process for electrolytically plating a tin/indium alloy upon a substrate, said process comprising:

a. contacting the substrate with a plating solution comprising:

(i) tetravalent tin salt of metastannic acid;

(ii) trivalent indium salt of an organosulfonic acid;

(iii) chelating agent; and

(iv) a source of alkalinity; and

b. applying an electrical potential to the substrate thereby causing it to become a cathode and causing a tin/indium alloy to plate upon said substrate;

wherein the plating solution is substantially cyanide free and has a pH in the range of from 7 to 11.

US 6,331,241 B1

METHOD OF MAKING CHROMIUM-PLATED STEEL

Ersan Ilgar, Kirtland, Ohio, assignor to USX Corporation, Pittsburgh, Pa.

Filed Jul. 24, 2000, Appl. No. 624,292

Int. Cl. C25D *3/04*

U.S. Cl. 205—283 **14 Claims**

8. Method of continuously electroplating steel strip comprising passing said steel strip through a bath, at a temperature of 110 to 130° F., comprising about 50 to about 200 ppm sulfuric acid, about 500 to about 2000 ppm fluoride ion, and about 5.8 to about 40.6 g/L $HCrO_4^-$, to provide a residence time in said bath for said strip of 5 to 15 seconds.

US 6,331,242 B1

ANODIC ENCASEMENT CORROSION PROTECTION SYSTEM FOR UNDERGROUND STORAGE TANKS, AND METALLIC COMPONENTS THEREOF

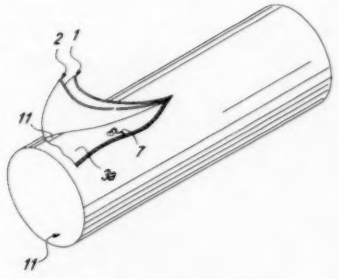
A. Michael Horton, Trussville, Ala., assignor to United States Pipe and Foundry Company, Inc., Birmingham, Ala.

Continuation-in-part of application No. 09/455,974, filed on Dec. 6, 1999, now Pat. No. 6,214,203. This application Jun. 21, 2000, Appl. No. 598,745.

This patent is subject to a terminal disclaimer.

Int. Cl. C23F *13/00*

U.S. Cl. 205—724 **19 Claims**



1. A method for protecting a corrosible metallic element of a tank, comprising the steps of:

a. overlaying at least a portion of said tank with a sacrificial anodic material, said sacrificial anodic material having a tank-facing surface and a barrier-facing surface;

b. electrically connecting said corrosible metallic element to said sacrificial anodic material by means for conducting electrical current; and

c. encasing said tank and said sacrificial anodic material in an environmental barrier.

US 6,331,243 B1
PROCESS AND APPARATUS FOR PREVENTING OXIDATION OF METAL

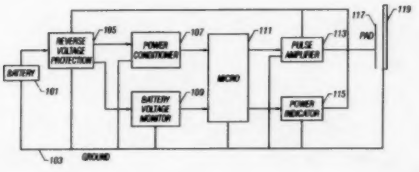
Michael E. Lewis, Hartsville, Ohio, assignor to Red Swan, Inc., Mililani, Hi.

Continuation-in-part of application No. 09/066,174, filed on Apr. 24, 1998, now Pat. No. 6,046,515, Provisional application No. 60/044,898, filed on Apr. 25, 1997. This application Mar. 17, 2000, Appl. No. 527,552.

This patent is subject to a terminal disclaimer.

Int. Cl. C23F *13/00*

U.S. Cl. 205—727 **23 Claims**



13. A method for alleviation of oxidation of a metal object in an oxidizing environment comprising:

(a) connecting the metal object to an electrical ground;

(b) connecting a source of DC voltage having a first voltage to the ground;

(b) attaching a fastener to the metal object;

(c) connecting a capacitor to the fastener;

(d) operatively coupling a microprocessor to the source of DC voltage and to a pulse amplifier,

(e) using the microprocessor to provide a pulsed signal to the pulse amplifier;

(f) amplifying the pulsed signal with the pulse amplifier; and

(g) providing the amplified pulses to the fastener via the capacitor.

US 6,331,244 B1
SENSORS FOR DETECTING ANALYTES IN FLUIDS

Nathan S. Lewis, La Canada, and Erik Severin, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of application No. 09/258,713, filed on Feb. 26, 1999, now Pat. No. 6,093,308, which is a continuation of application No. 08/949,730, filed on Oct. 14, 1997, now Pat. No. 5,911,872, which is a continuation of application No. 08/696,128, filed on Aug. 14, 1996, now Pat. No. 5,788,833, which is a continuation-in-part of application No. 08/410,809, filed on Mar. 27, 1995, now Pat. No. 5,571,401. This application Jan. 6, 2000, Appl. No. 478,680.

Int. Cl. G01N *27/26*

U.S. Cl. 205—777.5 **23 Claims**

1. A method for identifying a chemical analyte, wherein said chemical analyte is a biomolecule, using a sensor array, said method comprising:

(a) providing a sensor array, wherein each sensor comprises a conductive region and a nonconductive organic polymer region;

(b) contacting said biomolecule with said sensor array to produce a response; and

(c) analyzing said response thereby identifying said biomolecule.

US 6,331,245 B1
PETROLEUM RESID PELLETIZATION

Jon C. Moretta, and Murugesan Subramanian, both of Houston, Tex., assignors to Kellogg Brown & Root, Inc., Houston, Tex.

Filed Nov. 23, 1999, Appl. No. 447,408

Int. Cl. C16C *1/00*

U.S. Cl. 208—39 **19 Claims**

1. A process for pelletizing petroleum resid, comprising:

heating the resid to a temperature at which it is in a liquid state;

continuously feeding the hot resid to an inlet of a centrifugal prilling head comprising a plurality of radially arrayed discharge orifices;

rotating the prilling head to discharge hot resid from the orifices into free space at an upper end of a pelletizing vessel having a diameter larger than a throw-away diameter of the discharged resid;

allowing the discharged resid to break apart and form into substantially spherical pellets in a high temperature zone of the pelletizing vessel at which the resid is liquid and fall downwardly into a bath of a liquid cooling medium maintained at a temperature effective to solidify the pellets in a substantially spherical form;

withdrawing a slurry of the solidified pellets and the cooling medium from the pelletizing vessel;

substantially separating the pellets from the cooling medium.

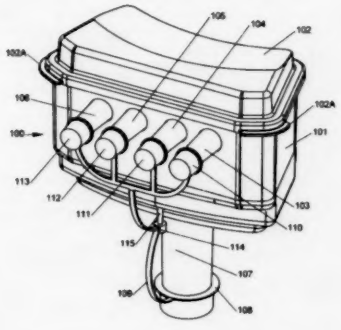
US 6,331,246 B1
WASTE FILTER AND MANIFOLD SYSTEM

Scott Beckham, Newport Beach; Dale Emis, Mission Viejo, and Nilesh Patel, Laguna Niguel, all of Calif., assignors to Stryker Corporation, Kalamazoo, Mich.

Filed May 8, 2000, Appl. No. 566,491

Int. Cl. B01D *35/30*

U.S. Cl. 210—136 **20 Claims**



1. A filtration unit comprising,

a substantially rigid housing,

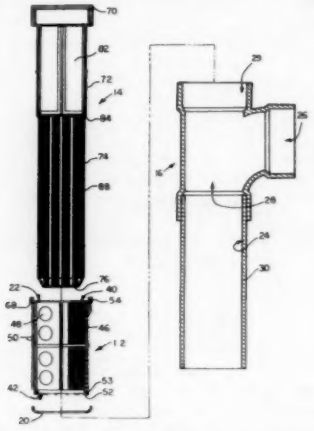
a plurality of inlet ports mounted at said housing,

at least one outlet port mounted at said housing and spaced apart from said plurality of inlet ports,

a plurality of check valves, each adapted to be attached to a respective one of said inlet ports and interposed between said inlet ports and said outlet port to control material flow therebetween in said housing, and

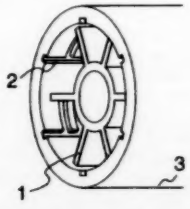
a filter device interposed between said check valves attached to said inlet ports and said outlet port in said housing to filter the material flow therebetween.

US 6,331,247 B1
SEPTIC TANK FILTERING SYSTEM
Kenneth E. Zoeller, Louisville; Matthew E. Byers, Lawrenceburg, both of Ky.; William V. West, Greenville, Ind., and Jason Fletcher, Louisville, Ky., assignors to Zoeller Company, Louisville, Ky.
Division of application No. 09/334,249, filed on Jun. 16, 1999, now Pat. No. 6,136,190. This application Aug. 16, 2000, Appl. No. 639,545.
This patent is subject to a terminal disclaimer.
Int. Cl. B01D *29/56*
U.S. Cl. 210—299 19 Claims



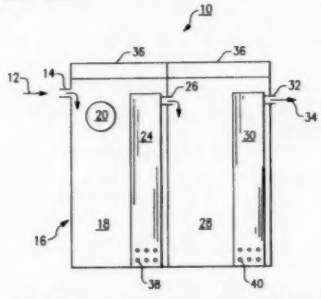
1. A removable septic tank filtering system comprising
an outer secondary filter, secured within an outlet pipe fitting within a septic tank, wherein the outer secondary filter includes an opening passing therethrough;
an inner primary filter slidingly engaged within the opening in the outer secondary filter; and
wherein, upon removal of the inner primary filter from the septic tank, the outer secondary filter filters effluent passing through the outlet pipe fitting prior to discharge of the filtered effluent from the septic tank through a plurality of filtering openings contained in the outer secondary filter.

US 6,331,248 B1
HOLLOW FIBER MEMBRANE MODULE
Tohru Taniguchi, and Nobuhiko Suga, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Mar. 20, 1998, Appl. No. 43,963
Claims priority, application Japan, Sep. 21, 1995, 7-242758; Nov. 13, 1995, 7-294002
Int. Cl. B01D *63/02*
U.S. Cl. 210—321.8 17 Claims



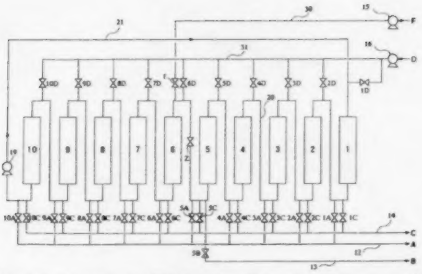
1. A hollow fiber membrane module comprising:
a module case;
a hollow fiber membrane bundle comprising a plurality of hollow fiber membranes;
a bonding portion for fixing and bonding at least one end of the hollow fiber membrane bundle to the module case, the bonding portion comprising a silicone resin;
a reinforcing rib completely embedded in the bonding portion for reinforcing the bonding portion, said reinforcing rib being directly fixed to the module case;
a female thread located inside of said module case; and
a male thread located on said reinforcing rib, said male thread being engageable with said female thread to secure said reinforcing rib to said module case.

US 6,331,249 B1
APPARATUS AND METHOD FOR WASTEWATER NUTRIENT RECOVERY
Douglas J. Nelson, Hamilton; James E. Knight, Oswego, and Mark C. Noga, Cayuga, all of N.Y., assignors to Knight Treatment Systems, Inc., Oswego, N.Y.
Filed Aug. 28, 2000, Appl. No. 649,472
Int. Cl. C02F *1/42;3/30*
U.S. Cl. 210—610 16 Claims



9. An method for treating a secondary treated wastewater effluent, the method comprising:
supplying a secondary wastewater effluent from an aerobic treatment process to an anoxic first zone for accepting the effluent, said first zone including heterotrophic bacteria, a carbon source, and an outlet structure including a limestone aggregate;
flowing said effluent through said outlet structure;
flowing said effluent into a second zone via an entrance structure, said entrance structure in fluid communication with said outlet structure;
flowing said effluent through an exit structure in fluid communication with said second zone, said exit structure including a cationic exchange medium;
discharging the effluent to a disposal mechanism.

US 6,331,250 B1
METHOD AND EQUIPMENT FOR CHROMATOGRAPHIC SEPARATION
Kikuzo Kaneko; Takayuki Masuda; Fumihiko Matsuda; Kohei Sato, and Kouji Tanikawa, all of Tokyo, Japan, assignors to Organo Corporation, Tokyo, Japan
PCT No. PCT/JP98/04166, § 371 Date May 20, 1999, § 102(e) Date May 20, 1999, PCT Pub. No. WO99/15251, PCT Pub. Date Apr. 1, 1999
PCT Filed Sep. 17, 1998, Appl. No. 308,560
Claims priority, application Japan, Sep. 22, 1997, 9-257055; Mar. 23, 1998, 10-092225
Int. Cl. B01D *15/08*
U.S. Cl. 210—635 6 Claims
1. A chromatographic separation process for chromatographic separation comprising passing a starting fluid material containing



at least 3 components differing in affinity for chromatographic packing and ranging from a strong-affinity component to a weak-affinity component through a packing bed while using desorbent to separate said at least 3 components into at least 3 fractions;

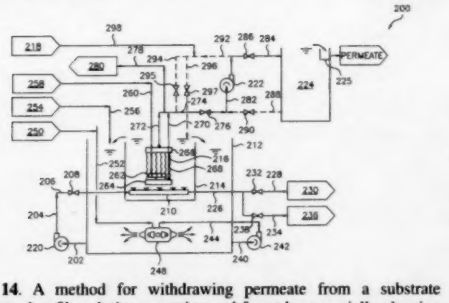
characterized in that at least 2 packings comprising at least one ion exchanger and differing in the resolution of the components are used as chromatographic packing in contact with a fluid containing a component having a medium affinity for chromatographic packing at least between the position of feeding said starting fluid material to said packing bed and the position of withdrawing said component having the medium affinity for chromatographic packing from said packing bed between which positions at least a first packing high in the resolution of said component having the medium affinity for chromatographic packing and the component having a weak affinity for chromatographic packing and a second packing high in the resolution of the component having a strong affinity for chromatographic packing and said component having the medium affinity for chromatographic packing are combined in a coexistent state to adjust the resolutions of the components.

US 6,331,251 B1

SYSTEM AND METHOD FOR WITHDRAWING PERMEATE THROUGH A FILTER AND FOR CLEANING THE FILTER IN SITU

Michael Arthur Del Vecchio, Flemington; Robert Eben Loudon, Howell, both of N.J., and Paul Matthew Sutton, Danbury, Conn., assignors to Envirogen, Inc., Lawrenceville, N.J.

Filed Jun. 10, 1999, Appl. No. 329,538
Int. Cl. B01D *65/02*
U.S. Cl. 210—636 **26 Claims**



14. A method for withdrawing permeate from a substrate through a filter during operation and for at least partially cleaning the filter in situ during cleaning, said method comprising the steps of:

(a) providing a compartment at least partially surrounding the filter;

(b) during operation,

(i) introducing substrate from a vessel into the compartment,

(ii) returning a portion of received substrate from the compartment to the vessel, and

(iii) withdrawing, through the filter, permeate from substrate received in the compartment; and

(c) during cleaning,

(i) preventing flow of substrate into the compartment from the vessel,

(ii) introducing a cleaner into the compartment or filter, and

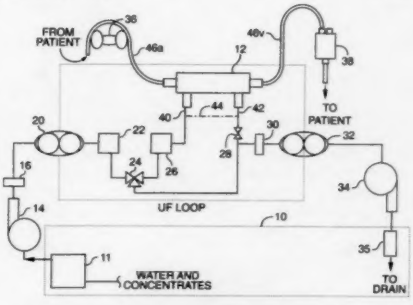
(iii) at least partially submerging the filter to at least partially clean the filter, all while maintaining the filter in situ.

US 6,331,252 B1

METHODS FOR PRIMING A BLOOD COMPARTMENT OF A HEMODIALYZER

Waleed Mutasem El Sayyid, Miami, and Cameron Scott Casterline, Pembrooke Pines, both of Fla., assignors to Baxter International Inc., Deerfield, Ill.

Filed Jul. 31, 1998, Appl. No. 126,761
Int. Cl. B01D *61/00*
U.S. Cl. 210—646 **16 Claims**



4. In a hemodialysis method, a method for priming a hemodialyzer comprising a dialysate compartment, a blood compartment, and a dialysis membrane separating the dialysate and blood compartments, the method comprising the steps:

(a) delivering a liquid to a dialysate inlet of the dialysate compartment at a first volumetric delivery rate;

(b) passing the liquid through the dialysate compartment from the dialysate inlet to a dialysate outlet of the hemodialyzer; and

(c) delivering the liquid from the dialysate outlet at a second volumetric delivery rate that is less than the first volumetric delivery rate so as to cause a net flow of the liquid from the dialysate compartment to the blood compartment through the dialysis membrane.

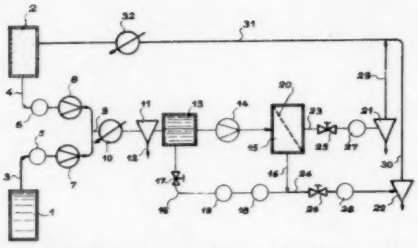
US 6,331,253 B1

METHOD AND PLANT FOR TANGENTIAL FILTRATION OF A VISCOUS LIQUID

Luc Schrive, Pont Saint Esprit; Stéphane Sarrade, Noutpellier, and Christian Perre, Pierrelatte, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

PCT No. PCT/FR98/00746, § 371 Date Oct. 20, 1999, § 102(e) Date Oct. 20, 1999, PCT Pub. No. WO98/46337, PCT Pub. Date Oct. 22, 1998
PCT Filed Apr. 14, 1998, Appl. No. 402,299
Claims priority, application France, Apr. 15, 1997, 97 04619
Int. Cl. B01D *61/00*
U.S. Cl. 210—652 **26 Claims**

1. Method of filtration of a viscous liquid, said viscous liquid comprising at least one heavy component and at least one light component, and having an initial viscosity under the ordinary conditions of 0.01 Pa·s. to 1 Pa·s, said method being characterized in that, under the effect of pressure, a super-critical substance in the super-critical state is dissolved in the viscous liquid, this super-critical substance having a viscosity lower than that of said viscous



liquid, yielding a single phase liquid solution having a lower viscosity in comparison with the initial viscosity of the pure viscous liquid, said single phase liquid solution being treated under pressure by tangential filtration to produce a retained material comprising a portion of the super-critical substance and the heavy component, and a permeate comprising a portion of the super-critical substance and the light components.

US 6,331,254 B1

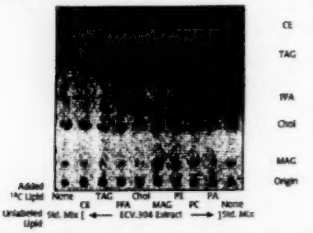
METHODS OF SEPARATION AND DETECTION

Thayer White, Clyde Hill, and Edward Nudelman, Seattle, both of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Continuation-in-part of application No. 09/049,941, filed on Mar. 30, 1998, now abandoned, and a continuation of application No. PCT/US99/06803, filed on Mar. 30, 1999. This application Dec. 17, 1999, Appl. No. 465,678.

Int. Cl. B01D *15/08*

U.S. Cl. 210—658 **18 Claims**



1. A method of separating and detecting a target molecule, comprising:

(a) providing a sample which contains said target molecule;

(b) separating said target molecule by thin layer chromatography (TLC), wherein said TLC comprises resolving said sample in one direction in one dimension, followed by resolving said sample at least a second time in the same dimension, wherein the mobile phase in said first resolution comprises chloroform-methanol-acetic acid/ammonium hydroxide and the mobile phase of said second resolution comprises a solvent mixture selected from the group consisting of hexane-diethylether-acetone, hexane-diethylether and 100% hexane; and

(c) detecting said separated target molecule.

US 6,331,255 B1

ACCESSIBLE WELL FOR BRINE TANK

Donald B. Peddicord, 2811 Misty Cir., Durant, Okla. 74701

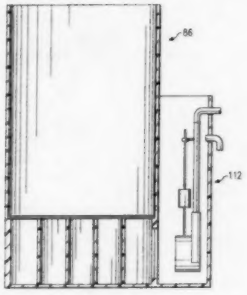
Filed Jul. 9, 1999, Appl. No. 350,592

Int. Cl. B01J *49/00*; **C02F** *5/00*

U.S. Cl. 210—670 **16 Claims**

1. An apparatus for use with a brine tank having a salt platform therein supporting a quantity of salt, the salt platform at a predetermined height within the brine tank, comprising:

a brine tank having a salt platform;



a well positioned outside of the brine tank and in communication with the interior of the brine tank;

a plurality of fluid passages interconnecting the brine tank and well; and

at least one plug for selectively plugging one or more of said plurality of passages.

US 6,331,256 B1

TREATMENT PROCESS FOR FLUORINE-CONTAINING WATER

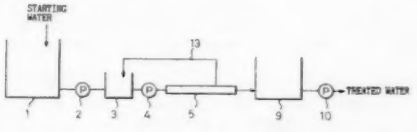
Satoshi Kezuka, and Takayuki Sadakata, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 9, 1999, Appl. No. 246,706

Claims priority, application Japan, Apr. 22, 1998, 10-112228; Apr. 27, 1998, 10-117155; Dec. 8, 1998, 10-348586; Dec. 8, 1998, 10-348683

Int. Cl. C02F *1/52*

U.S. Cl. 210—712 **8 Claims**



1. A process for treating fluorine-containing water by contacting the fluorine-containing water with calcium carbonate to react fluorine in the fluorine-containing water with the calcium carbonate and fix it as calcium fluoride, the process consisting essentially of the steps of:

circulating the fluorine-containing water containing the calcium carbonate without stagnating through a circulation system comprising a circulation tank, a separating membrane apparatus and a circulation conduit so the fluorine and the calcium carbonate react to form calcium fluoride and the separating membrane separates the resulting fluorine-removed treated water from remaining fluorine-containing water containing remaining calcium carbonate,

supplying untreated fluorine-containing water to the circulation tank, while removing the fluorine-removed treated water by passing the fluorine-containing water containing the calcium carbonate through the separating membrane and recirculating the remaining fluorine-containing water containing the remaining calcium carbonate back to the circulation tank from the separating membrane through the circulation conduit, and

continuing the circulation of fluorine-containing water containing calcium carbonate, the supply of untreated fluorine-containing water, the removal of the fluorine-removed treated water and the recirculation of the remaining fluorine-containing water, thereby converting calcium carbonate to calcium fluoride and producing fluorine-removed treated water.

US 6,331,257 B1

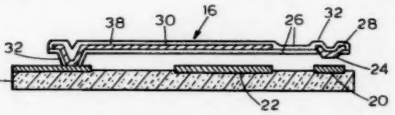
FABRICATION OF BROADBAND SURFACE-MICROMACHINED MICRO-ELECTRO-MECHANICAL SWITCHES FOR MICROWAVE AND MILLIMETER-WAVE APPLICATIONS

Robert Y. Loo, Agoura Hills; Adele Schmitz, Newbury Park; Julia Brown, Santa Monica; James Foschaar, Thousand Oaks, all of Calif.; Daniel J. Hyman, Cleveland Hts., Ohio, and Tsung-Yuan Hsu, Westlake Village, Calif., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Division of application No. 09/080,326, filed on May 15, 1998, now Pat. No. 6,046,659. This application Nov. 30, 1999, Appl. No. 452,052.

Int. Cl. H01B *13/00;* **H01P** *1/10;* **B44C** *1/22*

U.S. Cl. 216—13 **30 Claims**



1. A process for making a micro-electro-mechanical switch on a substrate, comprising the steps of

a) depositing a first metal layer on a substrate to form an input line, an output line, a substrate bias electrode, a substrate bias pad, and an armature bias pad;

b) depositing a sacrificial layer on top of a first metal layer and the substrate;

c) defining and delineating dimple molds in regions of the conducting line above the input line and output line.

d) depositing a beam structural layer on top of a sacrificial layer to form a structure of an armature, wherein an end of the beam structural layer is affixed to the substrate near the output line;

e) depositing a second metal layer on top of the structural layer to form a conducting transmission line and a suspended armature bias electrode; and

f) removing the sacrificial layer to release the armature.

US 6,331,258 B1

METHOD OF MANUFACTURE OF A BUCKLE PLATE INK JET PRINTER

Kia Silverbrook, Sydney, Australia, assignor to Silverbrook Research Pty Ltd, Balmain, Australia

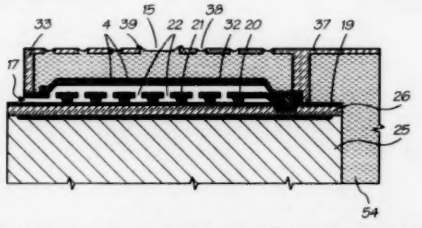
Filed Jul. 10, 1998, Appl. No. 113,074

Claims priority, application Australia, Jul. 15, 1997, P07991; Jul. 15, 1997, P08051

This patent is subject to a terminal disclaimer.

Int. Cl. B41J *2/04;* **H01L** *21/302*

U.S. Cl. 216—27 **8 Claims**



1. A method of manufacturing an ink jet printhead which includes:

providing a substrate;

depositing a plurality of permanent and sacrificial layers on the substrate including at least one permanent layer having a high coefficient of thermal expansion and at least one heating means permanent layer;

etching said permanent layers to form a resiliently deformable actuator;

depositing a further sacrificial layer over said actuator;

etching said further sacrificial layer to form slots therein;

depositing yet a further permanent layer on said further sacrificial layer and in said slots to form a roof and walls, respectively, of a nozzle chamber defining portion;

etching said yet further permanent layer to form a nozzle opening; and

etching the sacrificial layers to free the actuator and to form the nozzle chamber and, hence, the printhead, the actuator comprising a first layer consisting of the said at least one permanent layer which is anchored at opposed ends and the heating means layer carried on a surface of said at least one permanent layer closer to the nozzle, the heating means layer being arranged in a second permanent layer, also having a high coefficient of thermal expansion, so that, when said first layer is heated, bowing of the actuator towards the nozzle opening occurs to apply pressure to ink in the nozzle chamber for effecting ink ejection from the nozzle opening.

US 6,331,259 B1

METHOD FOR MANUFACTURING INK JET RECORDING HEADS

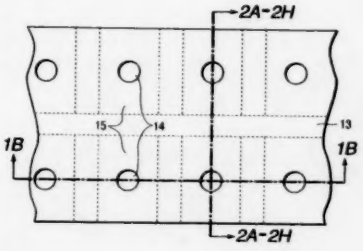
Teruo Ozaki, Yokohama; Masahiko Ogawa, Hino; Masami Ikeda, Tokyo; Ichiro Saito; Takayuki Yagi, both of Yokohama; Hiroyuki Ishinaga, Tokyo; Toshio Kashino, Chigasaki; Tomoyuki Hiroki, Zama; Yoshiyuki Imanaka, Kawasaki; Masahiko Kubota, Tokyo, and Muga Mochizuki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1998, Appl. No. 205,172

Claims priority, application Japan, Dec. 5, 1997, 9-336106; Apr. 16, 1998, 10-106293; Dec. 3, 1998, 10-344720; Dec. 4, 1998, 10-346075

Int. Cl. G01D *15/20;* **B44C** *1/22*

U.S. Cl. 216—27 **8 Claims**



1. A method for manufacturing ink jet recording heads, comprising the steps of:

forming a film of a soluble first inorganic material in the form of an ink-flow path pattern using the first inorganic material on a substrate having an ink discharge pressure-generating element formed thereon;

forming a film of a second inorganic material becoming ink flow walls on said film of the first inorganic material using the second inorganic material;

forming ink discharge openings on said film of the second inorganic material above said ink discharge pressure generating elements; and

eluting said film of the first inorganic material,

wherein said second inorganic material is silicon nitride and is formed by film formation.

US 6,331,260 B1

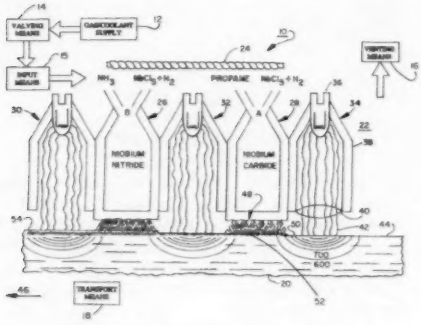
VD PROCESS AND APPARATUS FOR PRODUCING STAND-ALONE THIN FILMS

David W. Weyburne, Maynard, and Brian S. Ahern, Boxboro, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of application No. 09/062,734, filed on Apr. 14, 1998, now abandoned, which is a continuation-in-part of application No. 07/991,502, filed on Dec. 16, 1992, now Pat. No. 5,252,366, which is a division of application No. 07/469,128, filed on Jan. 24, 1990, now Pat. No. 5,129,360. This application Dec. 13, 1999, Appl. No. 458,734.

Int. Cl. C23C *16/00*

U.S. Cl. 216—72 12 Claims



1. A process for producing a stand-alone film, said process comprising the steps of:

depositing a thin film by vapor deposition in a reactor chamber, said thin film being deposited on a substrate, said substrate being held within a pocket of a substrate platter, said substrate being heated to a temperature at which said depositing occurs;

inputting an etch gas into said reactor, said etch gas flowing through said substrate platter and under said substrate held within said pocket, allowing said etch gas to remove said substrate to leave said thin film;

cooling said thin film from said temperature at which said depositing occurs; and

removing said thin film, said thin film being a stand-alone thin film.

US 6,331,261 B1

WATER SOFTENER SALT FORMULATION

Kurt J. Waatti, and Eugene J. Kuhajek, both of Crystal Lake, Ill., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 1, 1999, Appl. No. 410,313

Int. Cl. C01B *31/16;* B01J *20/04;20/22;20/34*

U.S. Cl. 252—184 7 Claims

1. An aqueous composition for regenerating an iron-contaminated cation exchange resin and removing about 90% or more of the iron, said composition consisting essentially of:

(a) 400 ppm to 6000 ppm by weight of an iron sequestering agent selected from the group consisting of monosodium citrate and monopotassium citrate;

(b) an alkali metal chloride having a molecular weight of from about 58 to about 75; and

(c) a surfactant.

US 6,331,262 B1

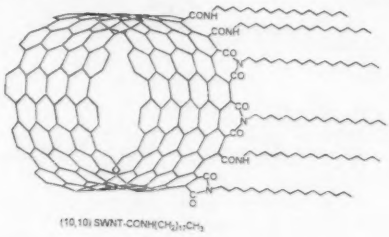
METHOD OF SOLUBILIZING SHORTENED SINGLE-WALLED CARBON NANOTUBES IN ORGANIC SOLUTIONS

Robert C. Haddon, and Jian Chen, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Provisional application No. 60/102,909, filed on Oct. 2, 1998, Provisional application No. 60/102,787, filed on Oct. 2, 1998. This application Sep. 22, 1999, Appl. No. 401,668.

Int. Cl. H01B *1/24;* C09L *1/44;* C01B *31/00*

U.S. Cl. 252—502 23 Claims



(10,10) SWNT-CONH$(CH_2)_{17}CH_3$

14. A solution comprising:

single-walled carbon nanotubes derivatized by terminating open ends of said single-walled carbon nanotubes with carboxylic acid groups, converting said carboxylic acid groups to acid chloride groups, reacting said acid chloride groups with an amine having a formula RNH_2, or R_1R_2NH wherein R, R_1 and R_2=$CH_3(CH_2)_n$ where n=9–50 or R, R_1 and R_2=$(C_6H_4)(CH_2)_nCH_3$, where n=5–50; and

an organic solvent.

US 6,331,263 B1

METHOD FOR PRODUCING LAMINATED MOLDINGS

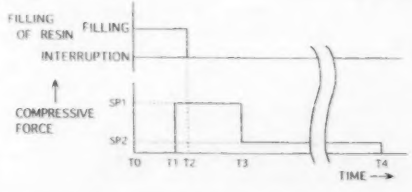
Tomokazu Abe; Satoshi Matsumoto, and Toshifumi Shimazaki, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation-in-part of application No. 08/941,471, filed on Sep. 30, 1997, now abandoned, which is a continuation of application No. 08/507,513, filed on Nov. 13, 1995, now abandoned. This application Oct. 27, 1998, Appl. No. 179,762.

Claims priority, application Japan, Dec. 22, 1993, 5-323843; Apr. 6, 1994, 6-068335

Int. Cl. B29C *45/56;45/76*

U.S. Cl. 264—40.5 28 Claims



1. A method of producing a laminated molding comprising the steps of:

placing a sheet of facing material in a mold, said mold having: a secured mold section; a movable mold section, said secured and movable mold sections having opposed molding surfaces that define a mold-cavity therebetween, wherein said sheet of facing material is placed against a molding surface of at least one of said mold sections; and a clamping device for urging said movable mold section towards said secured mold section, wherein said clamping device is capable of establishing a compressive force in said cavity between said mold sections and variably adjusting the compressive force between a zero-compressive force state and a maximum-compressive force state;

performing a resin injection step wherein molten resin having no foaming agent is injected into said cavity of said mold so that said resin is located between one of said secured and movable mold sections and said sheet of facing material;

performing a resin spread step wherein said movable mold section of said mold is moved towards said secured mold section by said clamping device of said mold to establish a first compressive force against said resin to cause said resin to spread throughout said cavity of said mold and against said sheet of facing material to form a laminated molding;

performing a cooling step wherein said clamping device is adjusted to establish a second compressive force against said laminated molding that is greater than zero and less than said first compressive force to prevent bowing of the facing material, said movable mold section not retracting when the compressive force is reduced; and

after cooling of said laminated molding, retracting said movable mold section of said mold from said secured mold section of said mold to enable removal of the laminated molding from said mold.

US 6,331,264 B1

LOW EMISSION POLYMER COMPOSITIONS

Joseph Varapadavil Kurian, Newark, Del., and Jing Chung Chang, Columbia, S.C., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Provisional application No. 60/127,080, filed on Mar. 31, 1999. This application Feb. 17, 2000, Appl. No. 505,785.

Int. Cl. C08L *67/02;* **D01D** *5/10*

U.S. Cl. 264—172.17 **30 Claims**

1. A composition for making fibers or films consisting essentially of 3-hydroxypropanoxy terminated polymer and melt stable, organic nitrogen-containing stabilizing polymer in an amount effective to reduce the emission of acrolein from said 3-hydroxypropanoxy terminated polymer while molten.

US 6,331,265 B1

REINFORCED POLYMERS

Marc Dupire, Mons, and Jacques Michel, Seneffe, both of Belgium, assignors to Atofina Research, Feluy, Belgium

Filed May 18, 2000, Appl. No. 574,659

Claims priority, application European Pat. Off., May 18, 1999, 99109785

Int. Cl. C08K *7/24*

U.S. Cl. 264—289.3 **10 Claims**

1. A method for the production of a reinforced polymer comprising:

(a) introducing carbon nanotubes into a polymer to provide a mixture of the polymer and the nanotubes;

(b) fiber melt spinning, extruding thermoforming or injection molding the mixture at or above the melting temperature (T_m) of the polymer whereby the mixture is stretched; and

(c) drawing the mixture at or above the glass transition temperature (T_g) of the polymer to form a fiber or sheet whereby the mixture is further stretched.

US 6,331,266 B1

PROCESS OF MAKING A MOLDED DEVICE

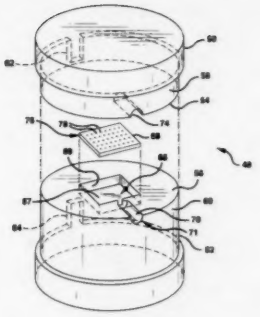
Kenneth G. Powell; Larry A. Monahan, both of Raleigh, N.C., and Burton H. Sage, Jr., Vista, Calif., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 29, 1999, Appl. No. 408,450

Int. Cl. B29C *33/42;33/44;43/10;45/26*

U.S. Cl. 264—313 **24 Claims**

1. A method of making a molded device comprising a plurality of micron or sub-micron size structural features, said method comprising the steps of:



providing a mold assembly having a mold section with a recess defining a mold cavity and having a silicon mold member disposed in said mold cavity, said silicon mold member having a mold surface with a contoured surface defining an impression of said device and said structural features facing said mold cavity;

introducing a plastic material into said mold cavity to fill said mold cavity and said contoured surface in said silicon mold member to form said molded device having a body and molded surface corresponding to said contoured surface and said structural features;

and removing said molded device from said mold section.

US 6,331,267 B1

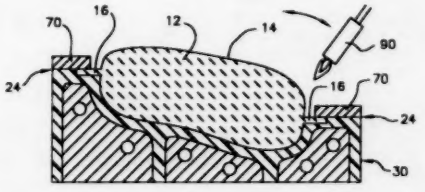
APPARATUS AND METHOD FOR MOLDING A CORE FOR USE IN CASTING HOLLOW PARTS

Martin Kin-Fei Lee, Niskayuna, N.Y.; George Gerald Gunn, Landrum, S.C., and James Michael Placko, West Chester, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 16, 1999, Appl. No. 441,325

Int. Cl. C04B *33/28*

U.S. Cl. 264—401 **18 Claims**



1. A method for molding a core for use in casting hollow parts, the method comprising:

providing a mold having a first mold portion and a second mold portion defining a cavity for molding the core and the first mold portion comprising a cutout extending along a parting line defined between the first mold portion and the second mold portion and opening onto the cavity;

providing a moldable material;

introducing the moldable material into the cavity of the mold to form the core and into the cutout to form a protective flash;

removing the second mold portion; and

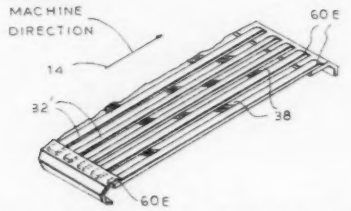
heating an exposed surface of the core.

US 6,331,268 B1

NONWOVEN FABRIC WITH HIGH CD ELONGATION AND METHOD OF MAKING SAME

Michael Kauschke, Rimsting, Germany, and Mordechai Turi, Princeton Junction, N.J., assignors to First Quality Nonwovens, Inc., State College, Pa.

Filed Aug. 13, 1999, Appl. No. 373,826
Int. Cl. B29C *43/00;* **D04H** *3/08;* **D01G** *25/00*
U.S. Cl. 264—518 **20 Claims**



1. A method of making a nonwoven fabric of substantially randomly oriented continuous spun fibers wherein the density of the fabric formed by the spun fibers varies between strips of relatively high density and strips of relatively low density, the strips extending along the length of the fabric in a first direction in an alternating pattern, with the high density strips separated from each other by low density strips, the alternating high density and low density strips providing the fabric with a higher percent elongation in a second direction than in the first direction, comprising the steps of:

(A) forming a flowing stream of substantially randomly oriented continuous spun fibers on an air permeable member;

(B) moving the air permeable member across the path of the fiber stream and over a suction box to intercept and collect the fibers on one face of the air permeable member and to bond the collected fibers together to form a nonwoven fabric;

(C) providing a pattern screen, the pattern screen defining a plurality of elongated air permeable regions separated by elongated relatively air impermeable regions, the elongated regions extending in the first direction in an alternating pattern, with the air permeable regions separated from each other by the relatively air impermeable regions;

(D) positioning the pattern screen in relation to the air permeable member and the suction box to cause the fibers to be collected on the one face of the air permeable member so as to form a fabric having a density that varies between strips of relatively high density and strips of relatively low density, the strips extending along the length of the fabric in the first direction in an alternating pattern, with the high density strips separated from each other by low density strips, the alternating high density and low density strips providing the fabric with a higher percent elongation in the second direction than in the first direction; and

(E) separating the collected fibers from the air pervious member.

US 6,331,269 B1

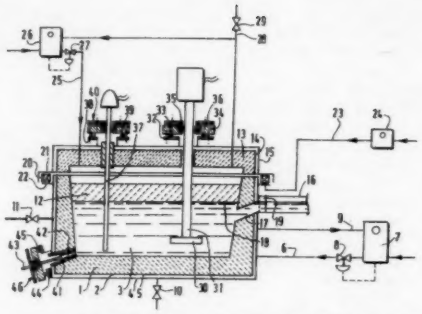
INERT TANK FOR TREATING OXIDIZABLE LIQUID METAL

Jacques Moriceau, Coublevie, France, assignor to Aluminium Pechiney, Paris Cedex, and Pechiney Rhenalu, Paris, both of France

PCT No. PCT/FR98/01487, § 371 Date Mar. 15, 2000, § 102(e) Date Mar. 15, 2000, PCT Pub. No. WO99/04046, PCT Pub. Date Jan. 28, 1999
PCT Filed Jul. 9, 1998, Appl. No. 462,083
Claims priority, application France, Jul. 16, 1997, 97 09238
Int. Cl. C21C *7/10*
U.S. Cl. 266—207 **14 Claims**

1. An inert vessel for treating an oxidizable liquid metal, comprising:

a vessel body and a lid mounted thereon with bearing surfaces at a junction therebetween, the body and lid each including a metal wall having an inner face coated with a refractory lining, the vessel body and optionally the lid having a plurality of holes therethrough,



movable auxiliary equipment passing through the lid, and optionally, auxiliary equipment passing through the body,

the vessel body comprising inlet and outlet means for the liquid metal including means for isolating liquid metal within the vessel from external atmosphere,

an optional pressure regulating means for adjusting pressure within the vessel to higher than atmospheric pressure, and

an inflatable seal disposed between the lid and the vessel body housed in a peripheral receptacle, said peripheral receptacle comprising at least one wall which is an extension of the lid, and at least one other wall which is an extension of the vessel body, said seal when inflated being directly adjacent the vessel body adjacent the junction and directly contacting the wall which is the extension of the lid and either the wall which is the extension of the vessel body or the vessel body itself or both the wall which is the extension of the vessel body and the vessel body itself.

US 6,331,270 B1

MANUFACTURING SOFT MAGNETIC COMPONENTS USING A FERROUS POWDER AND A LUBRICANT

Louis-Philippe Lefebvre, Montréal; Sylvain Pelletier, Ste-Julie, and Yannig Thomas, Montréal, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed May 28, 1999, Appl. No. 322,178
Int. Cl. B22F *3/12;3/26*
U.S. Cl. 419—27 **13 Claims**

1. A process for manufacturing an AC soft magnetic element from a ferromagnetic powder, comprising

a) mixing a non-coated ferromagnetic powder with a lubricant suitable for powder metallurgy purposes,

b) compacting the mixture of a),

c) heating the compacted mixture of b) at a temperature below sintering temperature of the powder in conditions effective to reduce compaction stress of the mixture, to remove at least part of said lubricant and to bring the magnetic properties of said mixture to a level suitable for AC soft magnetic components.

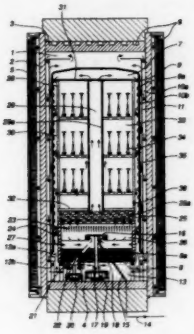
US 6,331,271 B1

METHOD FOR HOT-ISOSTATIC PRESSING OF PARTS

Carl Bergman, Västerås, Sweden, assignor to Flow Holdings GmbH, (SAGL) LLC, Lugano, Switzerland

Division of application No. 09/077,275, filed as application No. PCT/SE96/01568, filed on Nov. 29, 1996, now Pat. No. 6,250,907. This application Jun. 28, 2000, Appl. No. 608,711.
Claims priority, application Sweden, Dec. 1, 1995, 9504323
Int. Cl. B22F *3/15*
U.S. Cl. 419—49 **8 Claims**

1. A method of treating parts by hot-isostatic pressing with an inert gas as pressure medium and in the presence of a purifying agent for the inert gas, wherein the parts are placed in one or more



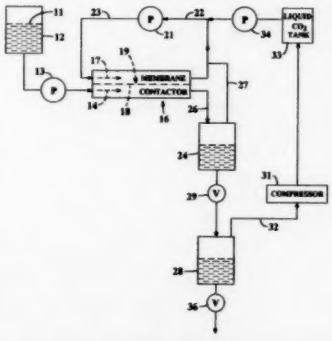
containers which are arranged in a furnace chamber in a pressure chamber, which method comprises the steps of reducing the pressure in the pressure chamber by evacuation of air, increasing the pressure in the pressure chamber by introducing the inert gas via one or more inlets into the pressure chamber, increasing the temperature in the container by activating heating elements in the furnace chamber, maintaining the increased pressure and the increased temperature for a predetermined time, and reducing the pressure and the temperature, wherein while introducing the inert gas, the inert gas is brought to circulate in the furnace chamber, whereby the inert gas and/or the purifying agent is/are heated, the inert gas is brought to pass through the purifying agent and the inert gas, after having passed through the purifying agent, is cooled before contacting the parts in the container.

US 6,331,272 B1

METHOD AND MEMBRANE SYSTEM FOR STERILIZING AND PRESERVING LIQUIDS USING CARBON DIOXIDE

Marc Sims, Berkeley, Calif., assignor to Porocrit, L.L.C., Berkeley, Calif.

Filed Jan. 12, 1999, Appl. No. 228,925
Int. Cl. A61L *2/00*
U.S. Cl. 422—28 **18 Claims**



1. A method for preserving a liquid by exposure of the liquid to pressurized dense carbon dioxide comprising the steps of:

directing the flow of said liquid along a liquid flow path which extends along a first surface of a porous membrane and directing a flow of said pressurized dense carbon dioxide along a separate carbon dioxide flow path which extends along an opposite surface of said porous membrane including contacting said liquid and pressurized dense carbon dioxide at pores in said membrane, and

recirculating said flow of pressurized dense carbon dioxide through said carbon dioxide flow path including maintaining the pressurized dense carbon dioxide in the pressurized dense condition throughout the recirculation thereof.

US 6,331,273 B1

REMOTELY PROGRAMMABLE MATRICES WITH MEMORIES

Michael P. Nova, Rancho Santa Fe; Andrew E. Senyei, San Juan Capistrano, and Gary S. David, La Jolla, all of Calif., assignors to Discovery Partners International, San Diego, Calif.

Continuation-in-part of application No. 08/428,662, filed on Apr. 25, 1995. This application Jun. 7, 1995, Appl. No. 473,660.
This patent is subject to a terminal disclaimer.
Int. Cl. G01N *15/06;33/53;* C12Q *1/68;* A61K *38/00*
U.S. Cl. 422—68.1 **19 Claims**

1. A method for electromagnetically tagging molecules or biological particles, comprising contacting the molecules or biological particles with a combination of a matrix with memory, wherein:

the combination of a matrix with memory comprises:

(A) a remotely addressable recording device, comprising a data storage unit; and

(B) a matrix material, wherein:

the matrix material is in the form of a container used for chemical syntheses that has a volume of about 100 ml or less;

the recording device is in contact with the matrix or in a solution that is in contact with the matrix; and

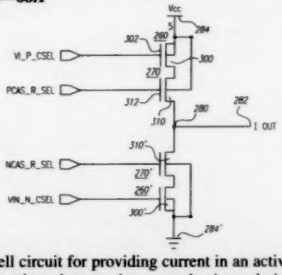
the contacting is effected by placing the molecules or biological particles in proximity to the combination or by placing the combination in physical contact with the molecules or biological particles.

US 6,331,274 B1

ADVANCED ACTIVE CIRCUITS AND DEVICES FOR MOLECULAR BIOLOGICAL ANALYSIS AND DIAGNOSTICS

Donald E. Ackley, Cardiff, and Scott O. Graham, San Diego, both of Calif., assignors to Nanogen, Inc., San Diego, Calif.

Continuation-in-part of application No. 09/026,618, filed on Feb. 20, 1998, now Pat. No. 6,099,803, which is a continuation-in-part of application No. 08/753,962, filed on Dec. 4, 1996, which is a continuation-in-part of application No. 08/534,454, filed on Sep. 27, 1995, now Pat. No. 5,849,486, which is a continuation-in-part of application No. 08/304,657, filed on Sep. 9, 1994, now Pat. No. 5,632,957, which is a continuation-in-part of application No. 08/271,882, filed on Jul. 7, 1994, now Pat. No. 6,017,696, which is a continuation-in-part of application No. 08/146,504, filed on Nov. 1, 1993, now Pat. No. 5,605,662. This application Jan. 29, 1999, Appl. No. 239,598.
Int. Cl. G01N *15/00;1/00;33/53;* C12Q *1/68;* C12M *1/00*
U.S. Cl. 422—68.1 **46 Claims**



1. A unit cell circuit for providing current in an active biological matrix device adapted to receive a conductive solution including

charged biological materials, the active biological matrix device comprising an array of unit cells, the unit cell circuit comprising:

a variable current control element including an input, an output and a control element, the control element being adapted to receive a first control signal via a first column line,

a select switch having an input, an output and a control element, the input being connected to the output of the variable current element, thereby providing a series connection between the variable current control element and the select switch, the control element being adapted to receive a second control signal via a first row line, the input of the variable current control element being connected to a first potential and the output of the select switch being adapted to contact the conductive solution, and

a return electrode, the return electrode being connected to a second potential and adapted to contact the conductive solution,

whereby in the presence of the conductive solution current is provided between the return electrode and the output of the select switch, said unit cell circuit being located on the biological matrix device.

US 6,331,275 B1

SPATIALLY ADDRESSABLE, CLEAVABLE REFLECTIVE SIGNAL ELEMENTS, ASSAY DEVICE AND METHOD

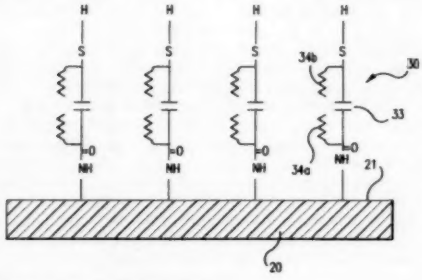
Jorma Virtanen, Irvine, Calif., assignor to Burstein Technologies, Inc., Irvine, Calif.

Continuation of application No. 09/419,407, filed on Oct. 15, 1999, now abandoned, which is a continuation of application No. 09/394,137, filed on Sep. 10, 1999, which is a continuation of application No. 08/888,935, filed on Jul. 7, 1997, now abandoned, Provisional application No. 60/030,416, filed on Nov. 1, 1996, Provisional application No. 60/021,361, filed on Jul. 8, 1996, now abandoned. This application Aug. 3, 2000, Appl. No. 632,113.

This patent is subject to a terminal disclaimer.

Int. Cl. G01N *15/06;* **C12Q** *1/68;* **C12P** *19/34;* **C07H** *19/00;21/00*

U.S. Cl. 422—68.1 **16 Claims**



1. An assay device, comprising:

a) a solid support substrate, and

b) a plurality of cleavable signal elements, including

a cleavable spacer, said cleavable spacer having a substrate-attaching end, a signal-responsive end, and a cleavage site intermediate said substrate-attaching end and said signal responsive end, wherein said cleavable signal elements attach through their substrate-attaching ends to said solid support substrate in a spatially addressable pattern;

a signal responsive moiety;

a first side member adapted to bind a first site on a chosen analyte;

a second side member adapted to bind a second site of said chosen analyte;

said signal responsive moiety being attached to said cleavable spacer at said signal responsive end, said first said member being attached to said cleavable spacer intermediate said signal responsive end and said cleavage site, and said second side member being attached to said cleavable spacer intermediate said cleavage site and said substrate attaching end; and

the signal responsive moiety remaining bound to the substrate after cleavage at the cleavage site only when said first and second side members are bound to said chosen analyte.

US 6,331,276 B1

SENSOR AND MEASURING APPARATUS USING THE SAME

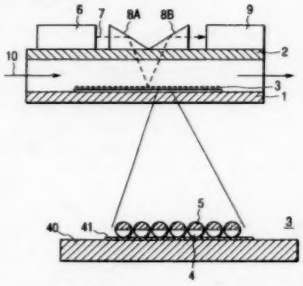
Hiroyuki Takei, Hiki-gun, and Takeshi Sakamoto, Asaka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 17, 1999, Appl. No. 313,782

Claims priority, application Japan, May 19, 1998, 10-136994

Int. Cl. G01N *21/27*

U.S. Cl. 422—82.09 **23 Claims**



1. A sensor comprising a flat substrate and a layer of insulating beads of a polymer or non-metal arranged effectively uniformly on said substrate, wherein a free electron thin metal microparticle layer is formed over substantially half the outer surface of said insulating beads on the opposite side to said substrate.

US 6,331,277 B2

MAGNETIC MATERIAL ATTRACTING/RELEASING PIPETTE DEVICE AND ANALYZER USING PIPETTE

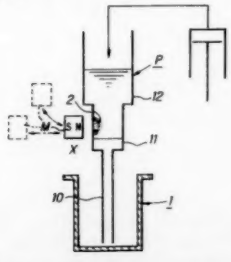
Hideji Tajima, Tokyo, Japan, assignor to Precision System Science Co., Ltd., Tokyo, Japan

Division of application No. 08/462,434, filed on Jun. 5, 1995, now Pat. No. 5,702,950. This application Sep. 30, 1997, Appl. No. 941,001.

Claims priority, application Japan, Jun. 15, 1994, 6-157959; Feb. 6, 1995, 7-039425

Int. Cl. G01N *21/01;1/14;* **B01L** *3/02*

U.S. Cl. 422—100 **9 Claims**



1. An apparatus for performing inspection comprising:

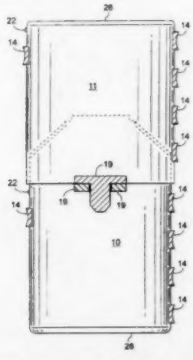
a pipette device having a smaller diameter section inserted into a container, a large diameter section, and an intermediate diameter section being cylindrically shaped therebetween, for drawing a mixture of liquid to be inspected, labeling material and magnetic material from the container through the smaller

diameter section and the intermediate diameter section to the large diameter section and discharging it to the container or another container through the intermediate diameter section and the smaller diameter section, a magnetic device being removably disposed adjacent only a substantially central portion of the intermediate diameter section for applying a magnetic field to the intermediate diameter section, and means for repeatedly and controllably sucking and discharging a liquid between a container and the large diameter section through the intermediate diameter section and the smaller diameter section to agitate and homogenously mix a mixture of a liquid and a magnetic material or to clean a surface of the liquid section line using a cleaning liquid to prevent cross contamination,

wherein said magnetic device is configured to apply the magnetic field to accumulate the magnetic material in a mixture of a liquid and a magnetic material on an inside wall of the intermediate diameter section and is configured to remove the magnetic field to allow the magnetic material to be transferred to the container or a further container, and

wherein said means for repeatedly and controllably sucking and discharging a liquid is configured to draw the mixture of a liquid and a magnetic material through the intermediate diameter section of the pipette and into the large diameter section so that a lower end of a liquid level (x) comes near to or higher than the lower end of the magnet device (M).

US 6,331,278 B1
SELF-CONTAINED DOUBLE HANDHOLD FOR PREVENTING FALSE URINE SPECIMENS
Herbert W. Copelan, 875 E. Camino Real, Apt. 14-E, Boca Raton, Fla. 33432
Filed Mar. 13, 2001, Appl. No. 804,314
Int. Cl. B01L *3/00*
U.S. Cl. 422—102 **10 Claims**



1. A double handhold for restricting a subject's hands from putting a false urine specimen into a container, said double handhold consisting of two units reversibly assembled together, wherein said double handhold prevents access to said container when said double handhold is assembled, and allows said access when said double handhold is not assembled; and wherein said two units comprise:

a. a first unit having means for holding said container, and

b. a second unit having means for preventing access to said container when said two units are assembled together; and wherein each of said first and second units comprises:

1) configuration means for assembling one of the first or second units to the other of said first or second units, whereby said two units can be locked together;

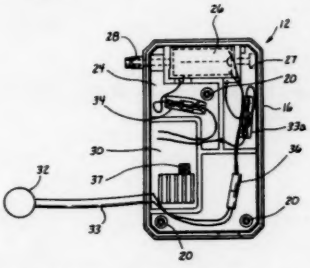
2) latch means operable to close automatically if not held open, and said latch means operable, when closed, to

a) lock said two units together when said two units are assembled, and to

b) block assembly of said two units when said two units are separate; and

3) actuator means located on a surface of each unit which is to be engaged by a subject's hands and, operable, while engaged by one of said subject's hands, to open and to hold open said latch means; whereby said subject must engage both hands on said actuator means on both said first and second unit to separate and to assemble said two units.

US 6,331,279 B1
OZONE GENERATING APPARATUS
Frank G. Martin, San Luis Obispo, Calif., assignor to Del Industries, Inc., Calif.
Continuation-in-part of application No. 09/257,745, filed on Feb. 25, 1999, now Pat. No. 6,129,850, Provisional application No. 60/090,771, filed on Jun. 26, 1998. This application Mar. 14, 2000, Appl. No. 524,630.
This patent is subject to a terminal disclaimer.
Int. Cl. B01J *19/08*; **C02F** *1/78*
U.S. Cl. 422—186.07 **25 Claims**



1. An ozone generator apparatus comprising:

a power supply assembly including a main enclosure and a power supply enclosed therein;

a chip electrode assembly including

a chip electrode structured to produce ozone, and

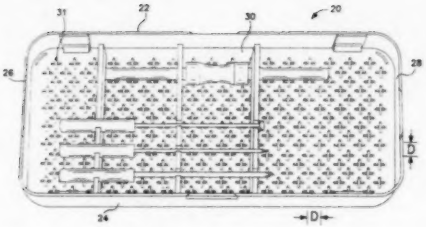
a housing enclosing the chip electrode separately from the power supply, the chip electrode assembly being coupled to the main enclosure without being introduced

therein; and

electrical connectors adapted to provide electrical connection between the power supply and the chip electrode, the chip electrode assembly being structured to be manually coupled and electrically connected to the power supply assembly without introducing the chip electrode into the main enclosure.

US 6,331,280 B1
MEDICAL INSTRUMENT STERILIZATION SYSTEM
Timothy E. Wood, Weare, N.H., assignor to Poly Vac, Inc., Manchester, N.H.
Filed May 14, 1999, Appl. No. 312,126
Int. Cl. A61L *2/00*
U.S. Cl. 422—300 **30 Claims**

1. In a combination including a sterilization tray assembly for sterilizing surgical instruments, said assembly including a tray having a plurality of holes and upstanding elements removably mounted on said tray for clasping or separating surgical instruments on said tray, wherein the bottom wall of said tray is populated at least in part with evenly spaced ventilation/mounting holes, wherein each of which ventilation/mounting holes comprise a central portion having at least one lobe communicating therewith, wherein each upstanding element has integrally formed mounting posts depending from the lower surface thereof, each post having a reduced diameter neck and a flange formed at a distal end thereof, the reduced diameter neck having a length approximating that of



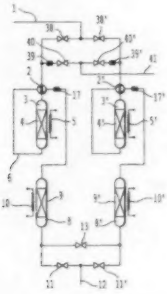
the thickness of the bottom wall of the tray, and the post flange portions are sized to fit through the holes' central portions, but are oversized relative to the hole lobes.

US 6,331,281 B1

PROCESS AND APPARATUS FOR CLEANING EXHAUST GAS

Suehachi Teru; Yasusada Miyano; Noboru Akita; Kenji Otsuka, and Takashi Shimada, all of Kanagawa-ken, Japan, assignors to Japan Pionics Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1999, Appl. No. 414,348
Claims priority, application Japan, Dec. 14, 1998, 10-355044
Int. Cl. B01D *53/58;53/54*
U.S. Cl. 423—237 **14 Claims**



1. A process for cleaning ammonia-containing exhaust gas comprising the steps of:

bringing an exhaust gas containing ammonia into contact with at least one train of an ammonia decomposition catalyst under heating to decompose the ammonia into nitrogen and hydrogen;

bringing a resultant mixed gas from the ammonia decomposition catalyst into contact with at least one train of an ammonia adsorbent to adsorb undecomposed ammonia remaining in the exhaust gas; and

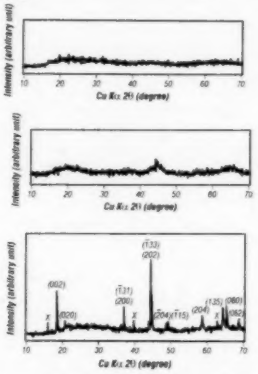
bringing at least one of an inert gas and a part of a purged gas generated by cleaning the exhaust gas into contact with the ammonia adsorbent under heating to regenerate the ammonia adsorbent while bringing a reproduced exhaust gas containing ammonia desorbed from the ammonia adsorbent into contact under heating with at least one of said ammonia decomposition catalyst and another ammonia decomposition catalyst under heating so as to clean the reproduced exhaust gas containing the ammonia desorbed from the ammonia adsorbent.

US 6,331,282 B1

MANGANESE OXYIODIDES AND THEIR METHOD OF PREPARATION AND USE IN ENERGY STORAGE

Arumugam Manthiram, and Jaekook Kim, both of Austin, Tex., assignors to Board of Regents, The University of Texas System

Provisional application No. 60/064,786, filed on Nov. 10, 1997. This application Nov. 10, 1998, Appl. No. 189,446.
Int. Cl. C01G *45/12*
U.S. Cl. 423—599 **35 Claims**



22. A method for forming an electrode, comprising:

combining in a solution a permanganate with an alkali metal iodide to obtain a manganese oxyiodide;

heating said manganese oxyiodide; and

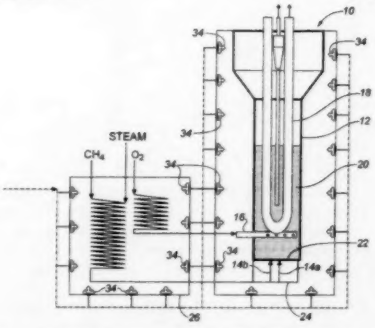
grinding said manganese oxyiodide to form the electrode.

US 6,331,283 B1

LOW-TEMPERATURE AUTOTHERMAL STEAM REFORMATION OF METHANE IN A FLUIDIZED BED

Surajit Roy, Burnaby; Barry Pruden, Calgary; Alaa Adris, Calgary, and John Grace, Calgary, all of Canada, assignors to University Technologies International Inc., Canada

Provisional application No. 60/100,520, filed on Sep. 16, 1998. This application Sep. 16, 1999, Appl. No. 397,638.
Int. Cl. C01B *3/02;3/26*
U.S. Cl. 423—652 **9 Claims**



1. An autothermal process for producing hydrogen comprising the steps of:

a) providing a reaction vessel enclosing a fluidizable catalyst bed of a suitable particulate catalyst;

b) fluidizing the catalyst bed by introducing reacting gases comprising a mixture of preheated steam and hydrocarbon gas into the catalyst bed such that the fluidized bed forms a reaction zone;

c) introducing oxygen into the reaction zone;

d) oxidizing a portion of the hydrocarbon gas in the reaction zone;

e) reforming the hydrocarbon gas with the steam to produce hydrogen gas in the reaction zone; and

f) separating and collecting the hydrogen gas by means of a perm selective membrane.

US 6,331,284 B1

P202 IS A TUMOR SUPPRESSOR

Mien-Chie Hung; Duen-Hwa Yan; Yong Wen, and Bill Spohn, all of Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Provisional application No. 60/139,039, filed on Jun. 10, 1999. This application Jun. 8, 2000, Appl. No. 590,652.

Int. Cl. A61K *51/00;48/00;38/21;31/711*

U.S. Cl. 424—1.11 **66 Claims**

1. A method for repressing transformation in a cell, the method comprising contacting said cell with a p202 polypeptide in an amount effective to inhibit a transformed phenotype.

US 6,331,285 B1

STRUCTURALLY DETERMINED CYCLIC METALLO-CONSTRUCTS AND APPLICATIONS

Shubh D. Sharma, Plainsboro, N.J., assignor to Palatin Technologies, Inc., Princeton, N.J.

Division of application No. 08/660,697, filed on Jun. 5, 1996, now Pat. No. 6,027,711. This application Dec. 15, 1999, Appl. No. 464,358.

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.69 **16 Claims**

1. A pharmaceutical composition comprising a cyclic peptide with a metal ion-binding backbone comprising at least two contiguous amino acid residues, wherein said amino acid residues forming the metal ion-binding backbone have a single sulfur atom and a plurality of nitrogen atoms available for complexing with a metal ion; and a metal ion complexed to the single sulfur atom and one or more of the nitrogen atoms forming a part of the metal ion-binding backbone.

US 6,331,286 B1

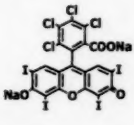
METHODS FOR HIGH ENERGY PHOTOTHERAPEUTICS

H. Craig Dees; Timothy Scott, both of Knoxville; John T. Smolik, Loudon, and Eric A. Wachter, Oak Ridge, all of Tenn., assignors to Photogen, Inc., Knoxville, Tenn.

Filed Dec. 21, 1998, Appl. No. 216,787

Int. Cl. A61K *51/00;38/00;* **A61M** *36/14;* **G01N** *33/567;* **C07K** *16/00*

U.S. Cl. 424—1.85 **33 Claims**



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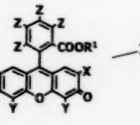

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1. A method of treating tumor and cancer diseased tissue comprising the steps of:

administering a radiosensitizer agent proximate to or into said diseased tissue; and

treating said diseased tissue with ionizing radiation having an energy between 1 kiloelectron volt and 1000 megaelectron volts so as to activate said radiosensitizer agent in said diseased tissue,

wherein said radiosensitizer agent is a halogenated xanthene.

US 6,331,287 B1

2'-DEOXY-2'-FLUORO-D-ARABINOFURANOSYL PYRIMIDINE NUCLEOSIDE

Peter S. Conti, Pasadena; Mian M. Alauddin, Alhambra, and John D. Fissekis, South Pasadena, all of Calif., assignors to University Advanced Bio-imaging Associates, Los Angeles, Calif.

Continuation-in-part of application No. 08/518,407, filed on Aug. 23, 1995, now Pat. No. 5,879,661. This application Mar. 6, 1998, Appl. No. 36,352.

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.89 **11 Claims**

1. A composition of matter for in vivo diagnostic imaging of cellular proliferation comprising:

(a) an imaging agent in dosage unit form, wherein the unit dose of the imaging agent comprises an effective amount for in vivo diagnostic imaging of cellular proliferation of 2'-deoxy-2'-fluoro-D-arabinofuranosyl pyrimidine nucleoside analog for localizing in proliferating cells and being detected in vivo, wherein said imaging agent is labeled with a positron emitting radioisotope and is detected by positron emission tomography; and

(b) a physiologically acceptable carrier or adjuvant.

US 6,331,288 B1

Patent Not Issued For This Number

US 6,331,289 B1

TARGETED DIAGNOSTIC/THERAPEUTIC AGENTS HAVING MORE THAN ONE DIFFERENT VECTORS

Jo Klaveness; Pål Rongved; Anders Høgset; Helge Tolleshaug; Alan Cuthbertson; Lars Hoff; Klaus Bryn; Halldis Hellebust, and Magne Solbakken, all of Olso, Norway, assignors to Nycomed Imaging AS, Oslo, Norway

Provisional application No. 60/049,263, filed on Jun. 7, 1997, Provisional application No. 60/049,264, filed on Jun. 6, 1997, Provisional application No. 60/049,266, filed on Jun. 7, 1997. This application Oct. 28, 1997, Appl. No. 959,206.

Claims priority, application United Kingdom, Oct. 28, 1996, 9622366; Oct. 28, 1996, 9622369; Feb. 4, 1997, 9702195; Apr. 24, 1997, 9708265; Jun. 6, 1997, 9711837; Jun. 6, 1997, 9711839

Int. Cl. A61B *8/00;* **A61K** *51/00;9/127*

U.S. Cl. 424—9.52 **22 Claims**

1. A targetable diagnostic and/or therapeutically active agent comprising a suspension in an aqueous carrier liquid of a reporter comprising gas-containing material in the form of phospholipid-stabilized gas microbubbles, said reporter being conjugated to more than one type of vector, the vectors binding to different targets on the same or different cells.

US 6,331,290 B1

FORMATION OF MONODISPERSE PARTICLES

George Richard Morgan, Didcot, United Kingdom, assignor to Accentus PLC, Didot, United Kingdom

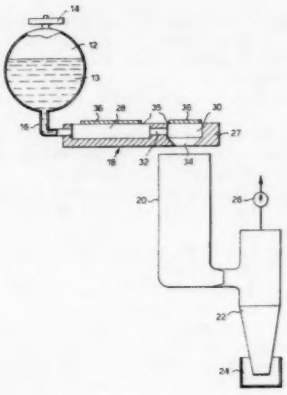
Filed Nov. 22, 1999, Appl. No. 444,506

Claims priority, application United Kingdom, Nov. 27, 1998, 9825883

Int. Cl. A61K *9/14;* **B05B** *1/08*

U.S. Cl. 424—46 **8 Claims**

1. A method for making particles from a liquid feedstock comprising a pharmaceutical composition and a solvent, the method comprising supplying the feedstock to an electronic droplet generator, the generator comprising a feed chamber to which the feedstock is supplied, a dispensing chamber having an inlet port communicating with the feed chamber and having an outlet port,



and electronic means for applying a pressure pulse to the feed chamber and a pressure pulse to the dispensing chamber so that substantially all the liquid feedstock in the dispensing chamber is ejected at once, to form a droplet of the liquid feedstock, the electronic means applying the pressure pulses repeatedly, and the resulting droplets forming an aerosol in a holding chamber adjacent to the outlet port either until the solvent has evaporated, or until the droplets have been inhaled by a patient.

US 6,331,291 B1

DENTIFRICE GEL/PASTE COMPOSITIONS

William R. Glace, 225 Soares, Orcutt, Calif. 93455; Robert L. Ibsen, 1571 E. Main St., Santa Maria, Calif. 93454, and George A. Skoler, 6 Carriage Way, White Plains, N.Y. 10605

Provisional application No. 60/051,874, filed on May 30, 1996. This application May 15, 1997, Appl. No. 856,606.

Int. Cl. A61K *7/16;5/00;7/20*

U.S. Cl. 424—49 **38 Claims**

1. A bulk-water-free dentifrice comprising a stable mixture of at least one of amylopectin containing discrete solid particles and modified amylopectin containing discrete solid particles, suspended in a liquid matrix material.

US 6,331,292 B1

TOOTH BLEACHING COMPOSITIONS

R. Eric Montgomery, Monterey, Mass., assignor to R. Eric Montgomeory, and Idex Dental Sciences, Inc., both of Monterey, Mass.

Continuation of application No. 08/719,569, filed on Sep. 25, 1996, now Pat. No. 5,922,307, Provisional application No. 60/004,258, filed on Sep. 25, 1995. This application Nov. 16, 1998, Appl. No. 192,609.

Int. Cl. A61K *7/20;* **C01B** *15/01*

U.S. Cl. 424—53 **20 Claims**

1. A tooth bleaching mixture for contacting a tooth surface in an oral cavity comprising

hydrogen peroxide in an effective tooth whitening amount,

an aqueous matrix comprising

a calcium chelating agent,

a thickening agent, and

an alkaline pH adjusting agent,

wherein the mixture has a pH within a range of between approximately 6.0 and approximately 10.0 and wherein the mixture is packaged as a single component system.

US 6,331,293 B1

DIMER AMIDOPROPYL DIMETHYL PHOSPHOLIPIDS AS BARRIER COMPOUNDS

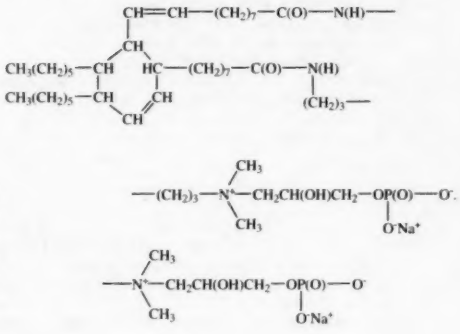
Scott Smith; Dean Smith, both of Chattanooga, Tenn., and Anthony J. O'Lenick, Jr., Dacula, Ga., assignors to Colonial Chemical INC, South Pittsburgh, Tenn.

Filed Jun. 4, 2001, Appl. No. 872,908

Int. Cl. A61K *7/42;9/127;31/685;31/66;* **G01N** *33/92;* **C07F** *9/02*

U.S. Cl. 424—59 **4 Claims**

1. A phospholipid compound having the following structure:



US 6,331,294 B1

USE OF COPOLYMERS OF MONOETHYLENICALLY UNSATURATED CARBOXYLIC ACIDS AS SOLUBILIZERS

Helmut Meffert, Mannheim; Axel Sanner, Frankenthal; Gunther Berndl, Herxheim; Folker Ruchatz, Neustadt; Karl Kolter, Limburgerhof, and Kurt Heinz Bauer, Freiburg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 17, 1999, Appl. No. 268,720

Claims priority, application Germany, Mar. 18, 1998, 198 11 919

Int. Cl. A61K *31/74;* **C08F** *220/52;220/04*

U.S. Cl. 424—78.03 **9 Claims**

1. A method of solubilizing pharmaceutical and/or cosmetic preparations based on water or water/alcohol which comprises adding to those preparations 1 to 50% by weight of a copolymer with a molecular weight of from 1000 to 30,000 g/mol comprising

a) 82 to 99.9 mol % of at least one monoethylenically unsaturated carboxylic acid selected from the group of acrylic acid, methacrylic acid and maleic acid;

b) 0.1 to 18 mol % of at least one monomer selected from the group

b_1) N,N—C_8–C_{30}-alkyl-substituted amides of monoethylenically unsaturated carboxylic acids selected from the group of acrylic acid, methacrylic acid and maleic acid,

b_2) N,N—C_8–C_{30}-dialkyl-substituted amides of monoethylenically unsaturated carboxylic acids selected from the group of acrylic acid, methacrylic acid and maleic acid,

b_3) C_8–C_{30}-alkyl-esters of acrylic acid or methacrylic acid;

c) 0 to 17.9 mol % of at least one monomer selected from the group of

c_1) vinyl esters of aliphatic C_8–C_{30}-carboxylic acids,

c_2) C_8–C_{30}-alkylvinyl ethers,

the mol % data for the individual components adding up to 100%, as solubilizer.

US 6,331,295 B1

COMPOSITION FOR PREVENTION SKIN IRRITATION CAUSED BY FECAL ENZYMES

Anthony A. Schulz, Floyds Knobs, Ind., assignor to Enviro-Derm Pharmaceuticals, Inc., Louisville, Ky.

Division of application No. 09/066,649, filed on Apr. 27, 1998, which is a division of application No. 08/631,119, filed on Apr. 12, 1996, now Pat. No. 5,869,033. This application Sep. 8, 1999, Appl. No. 391,389.

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *7/48;33/00*

U.S. Cl. 424—78.07 **13 Claims**

1. A solid composition comprising an organophilic clay dispersed in a water-permeable superabsorbent polymer matrix, wherein said organophilic clay is a reaction product of a clay selected from the group consisting of naturally occurring and synthetic montmorillonite, bentonite, beidellite, hectorite, saponite and stevensite with a long chain organic quaternary ammonium compound.

US 6,331,296 B1

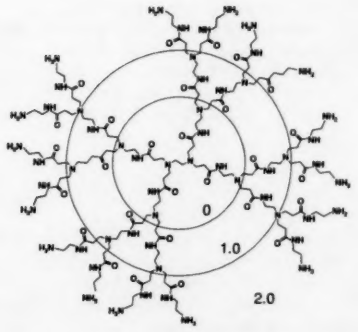
FOOD ADDITIVES WHICH AFFECT CONFORMATIONALLY ALTERED PROTEINS

Stanley B. Prusiner, 400 Pacheco St., San Francisco, Calif. 94116; Surachai Supattapone, 225 Buckingham Way #702, San Francisco, Calif. 94132, and Michael R. Scott, 1200 Clayton St., #9, San Francisco, Calif. 94114

Continuation-in-part of application No. 09/322,903, filed on Jun. 1, 1999, now Pat. No. 6,214,366. This application Nov. 22, 1999, Appl. No. 447,456.

Int. Cl. A01N *25/10*

U.S. Cl. 424—78.08 **11 Claims**



1. A food composition for preventing PrP^{Sc} formation in an animal, said composition comprising:

a therapeutically effective amount of an active composition comprising an unconjugated dendritic polycation and an acid in an amount sufficient to maintain a pH of about less than 6; and

a food;

wherein the active composition is present in an amount effective to prevent PrP^{Sc} formation.

US 6,331,297 B1

TICK PHEROMONES AND USES THEREOF

Sandra Anne Allan, Gainsville, Fla.; Daniel E. Sonenshine, Virginia Beach, Va., and Michael John Burridge, Gainesville, Fla., assignors to University of Florida, Gainesville, Fla., and Old Dominion University Research Foundation, Norfolk, Va.

Provisional application No. 60/107,314, filed on Nov. 6, 1998. This application Nov. 5, 1999, Appl. No. 434,657.

Int. Cl. A01N *25/00*

U.S. Cl. 424—84 **1 Claim**

1. A method for the control of Ixodes ticks, which comprises administering to said ticks or their situs a composition comprising a fungal biocontrol agent that kills ticks and a chemical from tick excreta which causes ticks to aggregate wherein said aggregation chemical is applied prior to, or contemporaneous with, the application of said biocontrol agent so as to cause ticks to aggregate at the situs of said control agent, wherein said biocontrol agent is *Beauvaria bassiana.*

US 6,331,298 B1

WOUND HEALING AND TREATMENT OF FIBROTIC DISORDERS

Mark William James Ferguson, Stockport, and Mamta Shah, Withington, both of United Kingdom, assignors to Renovo Limited, Manchester, United Kingdom

PCT No. PCT/GB93/00586, § 371 Date Sep. 16, 1994, § 102(e) Date Sep. 16, 1994, PCT Pub. No. WO93/19769, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 22, 1993, Appl. No. 307,640

Claims priority, application United Kingdom, Mar. 28, 1992, 9206861

Int. Cl. A61K *45/00*

U.S. Cl. 424—85.1 **12 Claims**

1. A method of inhibiting fibrosis in a patient in need thereof comprising providing said patient with an amount of transforming growth factor consisting essentially of TGF-β_3 sufficient to effect said inhibition.

US 6,331,299 B1

METHOD FOR TREATMENT OF CANCER AND INFECTIOUS DISEASE AND COMPOSITIONS USEFUL IN SAME

James E. Rothman, New York, N.Y.; F. Ulrich Hartl, Munich, Germany; Mee H. Hoe, New York, N.Y.; Alan Houghton, New York, N.Y.; Yoshizumi Takeuchi, Kobe, Japan, and Mark Mayhew, Tarrytown, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

PCT No. PCT/US96/13233, § 371 Date Feb. 13, 1998, § 102(e) Date Feb. 13, 1998, PCT Pub. No. WO97/06685, PCT Pub. Date Feb. 27, 1997

Provisional application No. 60/002,479, filed on Aug. 18, 1995, Provisional application No. 60/002,490, filed on Aug. 18, 1995. This PCT application Aug. 16, 1996, Appl. No. 11,648.

Int. Cl. A61K *48/00*

U.S. Cl. 424—93.21 **6 Claims**

1. A method for inhibiting the growth of a tumor in a mammalian subject, comprising (i) collecting from the subject a group of target cells harboring an antigen associated with the tumor; (ii) introducing ex vivo, a polynucleotide encoding a eukaryotic heat shock protein into the group of target cells, and then (iii) administering the group of target cells comprising the polynucleotide to the

subject so as to inhibit the growth of the tumor, wherein the method does not include the step of isolating a eukaryotic heat shock protein originating from the tumor to inhibit the growth of the tumor.

US 6,331,300 B1

COMPOSITIONS FOR PROVIDING A CHEMICAL TO A MICROORGANISM

Michael J. Dybas; Craig S. Criddle, both of Lansing, and Michael E. Witt, Holt, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Division of application No. 09/061,305, filed on Apr. 16, 1998, now Pat. No. 6,287,846, Provisional application No. 60/044,090, filed on Apr. 21, 1997. This application Oct. 22, 1998, Appl. No. 177,248.

Int. Cl. B09B *3/00;* **C02F** *3/00;* **C12N** *1/12;1/20*

U.S. Cl. 424—93.4 **11 Claims**

1. A composition which comprises an admixture of multiple particles which are water insoluble with micropores throughout each of the particles, the micropores of at least one particle of a second group of particles containing a microorganism and the micropores of at least one particle of a first group of particles containing a chemical selected from the group consisting of an electron acceptor, an electron donor, substances for modification of pH, a nutrient medium for the microorganism and mixtures thereof, wherein said chemical is exposed on a surface of said at least one particle and further is releasable over time in situ in an aqueous environment to the particles containing the microorganism.

US 6,331,301 B1

ANTIBODIES SPECIFIC FOR VASCULAR ENDOTHELIAL GROWTH FACTOR-B

Ulf Eriksson, Bålsta; Birgitta Olofsson, Stockholm, both of Sweden; Kari Alitalo, Espoo, and Katri Pajusola, Helsinki, both of Finland, assignors to Ludwig Institute for Cancer Research, New York, N.Y., and Helsinki University Licensing Ltd. Oy, Helsinki, Finland

Division of application No. 08/609,443, filed on Mar. 1, 1996, now Pat. No. 5,840,693, which is a continuation-in-part of application No. 08/569,063, filed on Dec. 6, 1995, now Pat. No. 5,928,939, which is a continuation-in-part of application No. 08/469,427, filed on Jun. 6, 1995, now Pat. No. 5,607,918, which is a continuation-in-part of application No. 08/397,651, filed on Mar. 1, 1995, now abandoned. This application May 6, 1997, Appl. No. 851,896.

Int. Cl. C07K *16/22;* **C12P** *21/08;* **A61K** *39/395*

U.S. Cl. 424—145.1 **5 Claims**

1. An antibody which reacts with a protein which exhibits a characteristic sequence

Pro-Xaa-Cys-Val-Xaa-Xaa-Xaa-Arg-Cys-Xaa-Gly-Cys-Cys (SEQ ID NO:16) and which protein has the property of promoting proliferation of endothelial cells or mesodermal cells, said protein comprising an amino acid sequence selected from the group consisting of the amino acid sequence of SEQ ID NO:2, the amino acid sequence of SEQ ID NO:5, the amino acid sequence of SEQ ID NO:7, the amino acid sequence of SEQ ID NO:9, the amino acid sequence of SEQ ID NO:11, the amino acid sequence of SEQ ID NO:13, and the amino acid sequence of SEQ ID NO:15.

US 6,331,302 B1

PROTEIN TYROSINE KINASE AGONIST ANTIBODIES

Brian D. Bennett, Thousand Oaks; David Goeddel, Hillsborough; James M. Lee, San Bruno; William Matthews, Woodside; Siao Ping Tsai, South San Francisco, and William I. Wood, Hillsborough, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

PCT No. PCT/US95/04228, § 371 Date May 23, 1995, § 102(e) Date May 23, 1995, PCT Pub. No. WO95/27061, PCT Pub. Date Oct. 12, 1995

Continuation-in-part of application No. 08/222,616, filed on Apr. 4, 1994, now Pat. No. 5,635,177, which is a continuation-in-part of application No. PCT/US93/00586, filed on Jan. 22, 1993, which is a continuation-in-part of application No. 07/826,935, filed on Jan. 22, 1992, now abandoned. This PCT application Apr. 4, 1995, Appl. No. 446,648.

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *39/395*

U.S. Cl. 424—146.1 **6 Claims**

1. A method for activating the kinase domain of SAL-S1 receptor protein tyrosine kinase

comprising contacting the extracellular domain of the SAL-S1 receptor protein tyrosine kinase with an effective amount of an agonist antibody thereto such that the tyrosine kinase domain of the SAL-S1 receptor protein tyrosine kinase is activated.

US 6,331,303 B1

LKTA DELETION MUTANT OF *P. HAEMOLYTICA*

Robert E. Briggs, Boone, and Fred M. Tatum, Ames, both of Iowa, assignors to Biotechnology Research and Development Corporation, Peoria, Ill.

Provisional application No. 60/060,060, filed on Sep. 25, 1997. This application Sep. 25, 1998, Appl. No. 160,340.

Int. Cl. A61K *39/102*

U.S. Cl. 424—255.1 **3 Claims**

1. An isolated and purified *P. haemolytica* bacterium which:

a) expresses no biologically active leukotoxin,

b) expresses a form of leukotoxin molecule which is a deletion mutant of about 66 kDa which lacks amino acids 34 to 378 and which induces antibodies which specifically bind to and neutralize biologically active leukotoxin; and

c) contains no foreign DNA.

US 6,331,304 B1

MACROPHAGE-INFECTING PARASITES EXPRESSING A GRANULOCYTE MACROPHAGE COLONY STIMULATING FACTOR

Barbara Papadopoulou; Marc Ouellette, and Martin Olivier, all of Quebec, Canada, assignors to Universite Laval, Sainte-Foy, Canada

Filed Sep. 13, 1996, Appl. No. 713,768

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *39/008;* **C12N** *1/11*

U.S. Cl. 424—269.1 **7 Claims**

1. An immunogenic composition, comprising:

an attenuated form of a macrophage infecting parasite which is a strain of Leishmania and which is transformed by a plasmid containing a granulocyte macrophage stimulating factor (GM-CSF) gene and which parasite expresses GM-CSF.

US 6,331,305 B1

WATER-IN-OIL COSMETIC COMPOSITIONS COMPRISING WILLOW BARK EXTRACT

Chune Sang, Staines, United Kingdom, assignor to The Procter & Gamble Co., Cincinnati, Ohio

PCT No. PCT/US97/09700, § 371 Date Apr. 5, 1999, § 102(e) Date Apr. 5, 1999, PCT Pub. No. WO97/49375, PCT Pub. Date Dec. 31, 1997

PCT Filed Jun. 23, 1997, Appl. No. 202,312

Claims priority, application United Kingdom, Jun. 27, 1996, 9613524; Sep. 12, 1996, 9619110

Int. Cl. A61K *9/107*

U.S. Cl. 424—401 **18 Claims**

1. Cosmetic composition for topical application to the skin in the form of a water-in-oil emulsion, comprising:

(a) continuous oil phase comprising a mixture of volatile silicone and non-volatile silicone;

(b) discontinuous aqueous phase; and

(c) willow bark extract.

US 6,331,306 B1

COMPOSITION IN THE FORM OF A WATER-IN-OIL EMULSION HAVING A CHANGING SHEAR RATE

Isabelle Afriat, Paris, and Virginie Boulier, Paray-Vieille-Poste, both of France, assignors to L'Oreal, Paris, France

Filed Jun. 30, 1999, Appl. No. 343,527

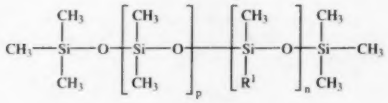
Claims priority, application France, Jul. 1, 1998, 98 08418

Int. Cl. A61K *7/48*

U.S. Cl. 424—401 **16 Claims**

1. A cosmetic or dermatological composition in the form of a cream, comprising: an aqueous phase dispersed in an oily phase with a silicone emulsifying agent, wherein the viscosity of the composition, measured with a Rheomat 180 viscometer at a shear rate of 200 s^{-1} and at 25° C., ranges from 3 Pa.s (30 poises) to 20 Pa.s (200 poises), said aqueous phase constituting at least 78% by weight with respect to the total weight of the composition with the water of the aqueous phase constituting at least 65% of the total weight of the composition, and said emulsifying agent consisting of the dimethicone copolyol of formula (I):

(I



wherein R^1 is

$$(CH_3H_6O)—(C_2H_4O)_{18}—(C_3H_6O)_{18}H$$

p=394 and n=4.

US 6,331,307 B1

O/W EMULSION WITH A HIGH ELECTROLYTE CONTENT AND ITS USE IN DERMOCOSMETICS, IN PARTICULAR FOR TREATING IRRITATION AND/OR SENSITIVE SKIN PHENOMENA

Laurence Sebillotte-Arnaud, L'Hay les Roses, France, and Didier Gagnebien, Westfield, N.J., assignors to L'Oreal, Paris, France

Continuation of application No. 08/949,685, filed on Oct. 14, 1997, now Pat. No. 6,136,328. This application Jul. 14, 2000, Appl. No. 617,038.

Claims priority, application France, Oct. 11, 1996, 96 12450

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *7/02*

U.S. Cl. 424—401 **26 Claims**

1. A composition in the form of an O/W emulsion, comprising:

a component which alleviates the irritability and intolerance of sensitive skin consisting of at least 2% by weight, relative to the total weight of the composition, of at least one water-soluble metal salt, and from 2–4.5% by weight, relative to the total weight of the composition, of an emulsifying system consisting of at least one fatty acid ester of polyethylene glycol, at least one fatty acid ester of polyoxycthylenated polyol, at least one fatty acid ester of a polyol or a combination thereof, excluding compositions comprising 1% by weight of a gelling agent consisting of a combination of a polyacrylamide, C_{13}–C_{14} isoparaffin and laureth-7.

US 6,331,308 B1

METHOD AND APPARATUS FOR PROVIDING LONG TERM PROTECTION FROM INTRUSION BY INSECTS AND OTHER COLD BLOODED ANIMALS

Peter Van Voris, Richland, and Dominic A. Cataldo, Kennewick, both of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Continuation of application No. 08/482,300, filed on Jun. 7, 1995, now Pat. No. 6,060,076, which is a continuation-in-part of application No. 08/348,774, filed on Dec. 1, 1994, now abandoned, which is a continuation of application No. 08/117,877, filed on Sep. 7, 1993, now abandoned, which is a continuation of application No. 07/893,970, filed on Jun. 4, 1992, now abandoned, which is a continuation of application No. 07/401,955, filed on Sep. 1, 1989, now abandoned, which is a continuation-in-part of application No. 07/555,113, filed on Jul. 19, 1990, now Pat. No. 4,998,959, which is a continuation-in-part of application No. 06/314,809, filed on Oct. 26, 1981, now abandoned, which is a continuation-in-part of application No. 06/314,810, filed on Oct. 26, 1981, now abandoned. This application Jun. 29, 1999, Appl. No. 342,529.

This patent is subject to a terminal disclaimer.

Int. Cl. A01N *25/10;25/34;37/12;47/40*

U.S. Cl. 424—411 **70 Claims**

1. A combination of a structure and a controlled release barrier, said combination comprising:

a structure, said structure being free of crawling or soil borne insects; and

a controlled release barrier, said barrier comprising

78–98 weight percent of polymeric matrix having an outside surface;

2–15 weight percent of pesticide, said pesticide being dispersed throughout said matrix; and

0–7 weight percent of a carrier, said barrier being placed at all entry points for accessing the structure by crawling or soil borne insects so as to prevent intrusion of said structure by the crawling or soil borne insects, said pesticide releasing to the surface of the polymeric matrix at a rate of least about 10 $\mu g/cm^2$/day so as to repel or kill said crawling or soil borne insects coming in contact with the pesticide.

US 6,331,309 B1

HYDROGEL COMPOSITIONS FOR THE CONTROLLED RELEASE ADMINISTRATION OF GROWTH FACTORS

Robert N. Jennings, Jr., San Jose; Bing Yang, Redwood City; Andrew A. Protter, Palo Alto, and Yu-Chang John Wang, Los Altos, all of Calif., assignors to Scios Inc., Sunnyvale, Calif.

Provisional application No. 60/099,168, filed on Sep. 4, 1998. This application Sep. 3, 1999, Appl. No. 390,164.

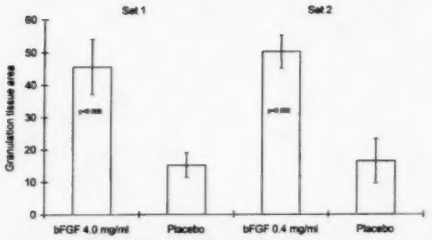
Int. Cl. A61F *13/00;* **A61K** *9/70*

U.S. Cl. 424—422 **37 Claims**

1. A hydrogel composition for the controlled release delivery of a polypeptide growth factor comprising:

(a) a therapeutically effective amount of a polypeptide growth factor containing at least one region of positive charge;

(b) a physiologically acceptable water-miscible anionic polymer;



(c) a physiologically acceptable water-miscible non-ionic polymeric viscosity controlling agent; and

(d) water.

US 6,331,310 B1

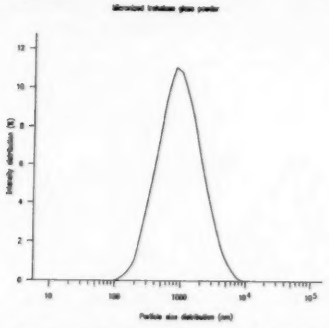
SOLID DOSE DELIVERY VEHICLE AND METHODS OF MAKING SAME

Bruce J. Roser, Cambridge, United Kingdom; Jaap Kampinga, Groningen, Netherlands; Camilo Colaco, Cambridge, and Julian Blair, Cambridgeshire, both of United Kingdom, assignors to Quadrant Holdings Cambridge Limited, United Kingdom

Continuation of application No. 08/349,029, filed on Dec. 2, 1994. This application Aug. 1, 2000, Appl. No. 628,380. This patent is subject to a terminal disclaimer.

Int. Cl. A61F *2/02;* **A61K** *13/02;9/70;9/50*

U.S. Cl. 424—423 **54 Claims**



1. A device for the topical, subcutaneous, intradermal, or transdermal delivery of a therapeutic agent, wherein the device includes a solid dose delivery vehicle comprising a therapeutically effective amount of said therapeutic agent and a polyol.

US 6,331,311 B1

INJECTABLE DEPOT GEL COMPOSITION AND METHOD OF PREPARING THE COMPOSITION

Kevin J. Brodbeck, Palo Alto, and Theodore T. Shen, Redwood City, both of Calif., assignors to ALZA Corporation, Mountain View, Calif.

Provisional application No. 60/033,439, filed on Dec. 20, 1996. This application Dec. 18, 1997, Appl. No. 993,031.

Int. Cl. A61F *2/00;* **A61K** *9/14*

U.S. Cl. 424—425 **27 Claims**

1. An injectable depot gel composition comprising:

a continuous, viscous gel phase comprising

a biocompatible polymer and

an organic solvent that dissolves the biocompatible polymer and forms a viscous gel;

a beneficial agent; and a separate, droplet phase dispersed in the viscous gel phase comprising an emulsifying agent, whereby the depot gel composition is thixotropic.

US 6,331,312 B1

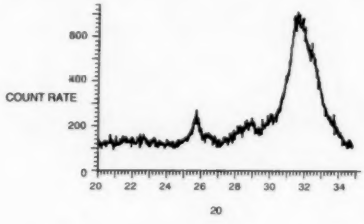
BIORESORBABLE CERAMIC COMPOSITES

Dosuk D. Lee, Brookline, Mass.; Christian Rey, Castanet, France; Maria Aiolova, Brookline, and Aliassghar Tofighi, Belmont, both of Mass., assignors to Etex Corporation, Cambridge, Mass.

Division of application No. 08/732,016, filed on Oct. 16, 1996, now Pat. No. 6,027,742, which is a continuation-in-part of application No. 08/650,764, filed on May 20, 1996, now Pat. No. 6,214,368, which is a continuation-in-part of application No. 08/446,182, filed on May 19, 1995, now Pat. No. 5,676,976. This application Mar. 2, 1998, Appl. No. 32,698.

Int. Cl. A61F *2/00*

U.S. Cl. 424—426 **9 Claims**



1. A method of preparing a calcium deficient apatitic calcium phosphate composite material, comprising:

mixing in any order,

(a) a calcium source consisting essentially of an amorphous calcium phosphate (ACP),

(b) a passive promoter, and

(c) a supplementary material selected to alter tensile strength and hardness, alter fracture toughness alter elasticity, alter resorption characteristics, provide imaging capacity, or alter flow properties and setting times of the composite, the supplementary material present in an amount effective to impart the selected characteristic to the composite; and

initiating conversion of the amorphous calcium phosphate into a calcium deficient apatitic calcium phosphate.

US 6,331,313 B1

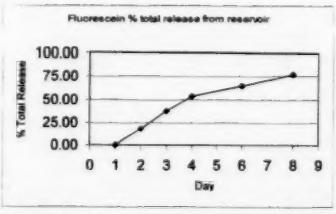
CONTROLLED-RELEASE BIOCOMPATIBLE OCULAR DRUG DELIVERY IMPLANT DEVICES AND METHODS

Vernon G. Wong, Menlo Park; Mae W. L. Hu, Los Altos Hills, and Donald E. Berger, Jr., San Jose, all of Calif., assignors to Oculex Pharmaceticals, Inc., Sunnyvale, Calif.

Filed Oct. 22, 1999, Appl. No. 426,141

Int. Cl. A61F *2/00*

U.S. Cl. 424—427 **19 Claims**



1. A biocompatible implantable ocular controlled release drug

delivery device sized for implantation within an eye for continuously delivering a drug within the eye for a period of at least several weeks comprising a polymeric outer layer that is substantially impermeable to the drug and ocular fluids covering a core comprising a drug that dissolves in ocular fluids, wherein said outer layer has one or more orifices through which ocular fluids may pass to contact the core and dissolve drug and dissolved drug may pass to the exterior of the device, said orifices in total having an area less than one percent of the total surface area of said device, and wherein the rate of release of the drug is determined solely by the composition of the core and the total surface area of the one or more orifices relative to the total surface area of said device.

US 6,331,314 B1

METHOD AND DEVICE FOR PRODUCING A PARENTERAL MEDICAMENT

Bernd Klinksiek; Said Mahiout, both of Bergisch Gladbach; Ricarda-Christine Nothelle, Leverkusen; Hans-Jürgen Hamann, Dormagen, and Jürgen Sdebik, Düsseldorf, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

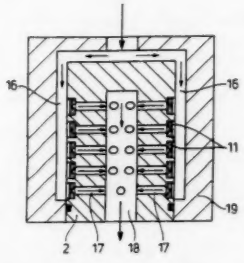
PCT No. PCT/EP96/04795, § 371 Date May 12, 1998, § 102(e) Date May 12, 1998, PCT Pub. No. WO97/17946, PCT Pub. Date May 22, 1997

PCT Filed Nov. 4, 1996, Appl. No. 68,812

Claims priority, application Germany, Nov. 15, 1995, 195 42 499

Int. Cl. A61K *9/127*

U.S. Cl. 424—450 **11 Claims**



1. A process for preparing a parenterally administrable pharmaceutical preparation comprising a liposome dispersion as a carrier for a pharmaceutical active compound, said process comprising preparing the liposome dispersion by a process comprising:

a) feeding an aqueous predispersion comprising one or more amphiphilic substances to a high-pressure homogenizer; and

b) pumping the aqueous predispersion under a pressure ranging from 600 bar to 900 bar through a high-pressure homogenizer apparatus;

said high-pressure homogenizer comprising:

i) at least one homogenizer nozzle consisting of a hard ceramic plate pressed into a steel body, said hard ceramic plate comprising a bore having a diameter ranging from 0.1 mm to 0.5 mm;

ii) an inlet channel to the bore incorporated into said steel body; and

iii) an outlet channel from the bore incorporated into said steel body.

US 6,331,315 B1

POWDER COMPOSITIONS OF UNILAMELLAR LIPOSOMES

Jean-Pierre Salles, Eguilles, France, assignor to Lipogel, Allauch, France

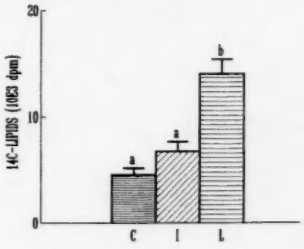
PCT No. PCT/FR98/01203, § 371 Date Feb. 16, 2000, § 102(e) Date Feb. 16, 2000, PCT Pub. No. WO98/56351, PCT Pub. Date Dec. 17, 1998

PCT Filed Jun. 11, 1998, Appl. No. 445,441

Claims priority, application France, Jun. 11, 1997, 97 07254

Int. Cl. A61K *9/127;9/133*

U.S. Cl. 424—450 **15 Claims**



1. A pulverulent composition, which comprises unilamellar liposomes, said liposomes, comprising:

a) an external lipid phase which consists essentially of phospholipids; and

b) an internal aqueous nucleus forming a temperature-reversible aqueous gel which radiates out up to the external lipid phase, which internal aqueous nucleus consists essentially of a mixture M of at least two different non-polymerizable gelatinizing agents G1 and G2, whose gel-sol phase transition point is higher than or equal to 37° C., with G1 being a gelatinizing agent which is selected from the group consisting of gelatin and carrageenans, and G2 being selected from the group consisting of carrageenans whose properties are different from the carrageenans selected for G1, and celluloses;

which liposomes have a diameter of between 20 nm and 200 nm;

and wherein the pulverulent composition is present in the form of particulate units which have a mean diameter of between 10 μm and 1000 μm and which are formed from one or more of the liposomes which is/are surrounded by a matrix which is selected from the group consisting of a dehydrated temperature-reversible aqueous gel which is selected from the group consisting of gelatin, carrageenans, dextrins and mixtures thereof, such that it contains, on average, from 10^{16} to 10^{18} liposomes/g of powder.

US 6,331,316 B1

ENTERIC COATED PHARMACEUTICAL TABLET AND METHOD OF MANUFACTURING

Ismat Ullah, Cranbury, and Gary J. Wiley, Jackson, both of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Continuation of application No. 09/118,418, filed on Jul. 17, 1998, now abandoned. This application Apr. 14, 2000, Appl. No. 549,455.

Int. Cl. A61K *9/20;9/48;9/32;31/70*

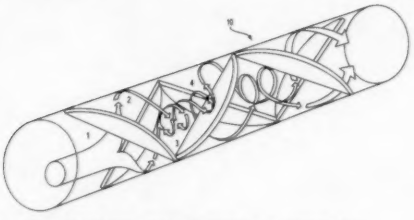
U.S. Cl. 424—482 **35 Claims**

1. A pharmaceutical tablet comprising a core comprising 2',3'-dideoxyinosine (ddI), a binder or filler, a disintegrant, and a lubricant, wherein said core is coated with an enteric coating comprising a methacrylic acid copolymer and a plasticizer, said enteric coating having a pH of 5.0±0.1, wherein said enteric coating imparts protection to said core so that said core is afforded protection in a pH environment of 3 or less while capable of releasing the ddI at a pH of 4.5 or higher, wherein said tablet contains no protective subcoat between the core and the enteric coating.

US 6,331,317 B1
APPARATUS AND METHOD FOR PREPARING MICROPARTICLES

Shawn L. Lyons, Cincinnati, and Steven G. Wright, Madeira, both of Ohio, assignors to Alkermes Controlled Therapeutics II Inc., Cambridge, Mass.

Filed Nov. 12, 1999, Appl. No. 438,659
Int. Cl. A61K *9/50;* **B01J** *13/02*
U.S. Cl. 424—489 **44 Claims**

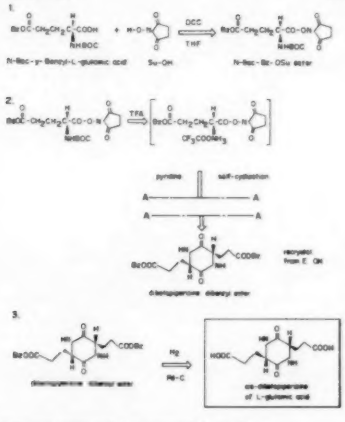


1. A method of preparing microparticles, comprising:
preparing a first phase, the first phase comprising an active agent and a polymer;
preparing a second phase;
preparing a quench liquid;
pumping the first phase and the second phase through a first static mixer to form an emulsion; and
flowing the emulsion through a manifold that includes a plurality of static mixers into the quench liquid whereby droplets of the emulsion form microparticles.

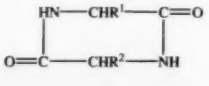
US 6,331,318 B1
CARBON-SUBSTITUTED DIKETOPIPERAZINE DELIVERY SYSTEMS

Sam J. Milstein, Larchmont, N.Y., assignor to Emisphere Technologies Inc., Tarrytown, N.Y.

Filed Sep. 30, 1994, Appl. No. 316,404
Int. Cl. A61K *9/16*
U.S. Cl. 424—490 **24 Claims**



1. A delivery composition comprising of:
(a) an active agent; and
(b) at least one diketopiperazine having the formula:



wherein R^1 and R^2 are hydrogen, C_1–C_{24} alkyl, C_1–C_{24} alkenyl, phenyl, naphthyl, (C_1–C_{10} alkyl)phenyl, (C_1–C_{10} alkenyl)phenyl, (C_1–C_{10} alkyl)naphthyl, (C_1–C_{10} alkenyl)naphthyl, phenyl (C_1–C_{10} alkyl), phenyl (C_1–C_{10} alkenyl), naphthyl (C_1–C_{10} alkyl), or naphthyl (C_1–C_{10} alkenyl);
both R^1 and R^2, optionally, are substituted with C_1–C_4 alkyl, C_1–C_4 alkenyl, C_1–C_4 alkoxy, —OH, —SH, and —CO_2R^3 or any combination thereof; wherein R^3 is hydrogen, C_1–C_4 alkyl, or C_1–C_4 alkenyl;
R^1 and R^2, optionally, are interrupted by oxygen, nitrogen, sulfur, or any combination thereof;
said phenyl, naphthyl, or phenyl and naphthyl groups, optionally, are substituted by C_1–C_6 alkyl, C_1–C_6 alkenyl, C_1–C_6 alkoxy, —OH, —SH, or CO_2R^4 wherein R^4 is hydrogen, C_1–C_6 alkyl, or C_1–C_6 alkenyl; and
R^1 and R^2 are not both hydrogen.

US 6,331,319 B1
GALACTOSIDASE MODIFIED SUBMUCOSAL TISSUE

Stephen F. Badylak, West Lafayette; Rae Denese Record, Lafayette, both of Ind., and Timothy B. McPherson, Columbia, Ill., assignors to Purdue Research Foundation, West Lafayette, Ind.

PCT No. PCT/US98/18956, § 371 Date Feb. 2, 2000, § 102(e) Date Feb. 2, 2000, PCT Pub. No. WO99/12555, PCT Pub. Date Mar. 18, 1999
Provisional application No. 60/058,545, filed on Sep. 11, 1997. This PCT application Sep. 11, 1998, Appl. No. 463,937.
Int. Cl. A61K *35/38*
U.S. Cl. 424—551 **7 Claims**

1. A tissue graft composition comprising vertebrate submucosal tissue enzymatically treated to be substantially free of the Gal epitope.

US 6,331,320 B1
PROCESS FOR PRODUCING AROMATIC COMPOUNDS BY SUPERCRITICAL WATER TREATMENT

Koichi Nakahara, Osaka; Takahisa Fujii, Kyoto; Wataru Miki, Hyogo; Kenzoh Nagami, Osaka, and Kunio Arai, Miyagi, all of Japan, assignors to Suntory Limited, Japan

PCT No. PCT/JP99/01896, § 371 Date Jan. 12, 2000, § 102(e) Date Jan. 12, 2000, PCT Pub. No. WO99/52841, PCT Pub. Date Oct. 21, 1999
PCT Filed Apr. 9, 1999, Appl. No. 445,408
Claims priority, application Japan, Apr. 9, 1998, 10-097819
Int. Cl. A61K *35/78*
U.S. Cl. 424—725 **12 Claims**

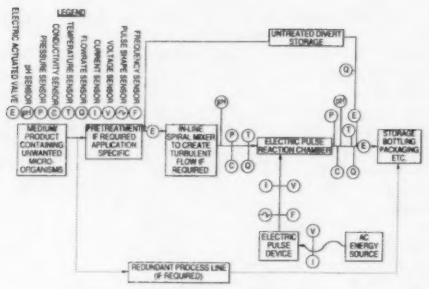
1. A process for producing plant-derived aromatic compounds or polymers thereof, comprising heating a plant material, together with water, in a pressurized container at a pressure of 100 to 300 atmospheres and a temperature of 250 to 500° C.; then cooling the inside of the container to about 100° C. or lower; extracting a tarry substance, which has been formed, with an organic solvent selected from the group consisting of alcohols, acetone, dimethyl sulfoxide, and acetonitrile; and isolating aromatic compounds or polymers thereof from the extract.

US 6,331,321 B1
PROCESS AND APPARATUS FOR REDUCTION OF MICROORGANISMS IN A CONDUCTIVE MEDIUM USING LOW VOLTAGE PULSED ELECTRICAL ENERGY

John A. Robbins, 1814 Commerce Ave., Suite A, Vero Beach, Fla. 32960

Filed Apr. 25, 2000, Appl. No. 557,963
Int. Cl. A23L *3/0005*
U.S. Cl. 426—231 **51 Claims**

1. A process for reducing microorganisms in a conductive medium, which comprises subjecting the medium containing


LEGEND
UNTREATED DIVERT STORAGE
MEDIUM PRODUCT CONTAINING UNWANTED MICRO-ORGANISMS
PRETREATMENT IF REQUIRED APPLICATION SPECIFIC
IN-LINE SPIRAL MIXER TO CREATE TURBULENT FLOW IF REQUIRED
ELECTRIC PULSE REACTION CHAMBER
STORAGE BOTTLING PACKAGING ETC.
ELECTRIC PULSE DEVICE
AC ENERGY SOURCE
REDUNDANT PROCESS LINE (IF REQUIRED)

microorganisms to low voltage pulsed electrical energy, the low voltage pulsed electrical energy being generated by a pair of electrodes contacting the medium and having a defined voltage, the low voltage pulsed electrical having a defined frequency and defined waveform, wherein the pulsed electrical energy forms no free radicals, creates no osmotic shock, and generates no ionizing radiation, wherein the pulsed electrical energy causes no detrimental change to the conductive medium, wherein the pulsed electrical energy reduces the microorganisms in the medium and wherein the conductive medium is a pumpable food or beverage.

US 6,331,322 B1

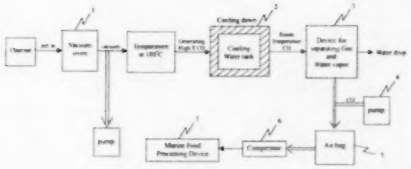
METHOD FOR PROCESSING MARINE PRODUCTS

Chih-Hsing Shih, Tung-Kang, and Tien-Pao Chiu, Ping-Tung, both of Taiwan, assignors to PT Intisamudera Citra Perkasa, Pelabuhan Benda Denpasar Bali, Indonesia

Filed Aug. 1, 2000, Appl. No. 630,096

Int. Cl. A23L *1/325*

U.S. Cl. 426—315 **1 Claim**



1. A method for processing marine products comprising:

a first step of putting natural charcoal in a vacuum oven and of drawing out the air in said vacuum oven with a vacuum pump to make said vacuum oven in a vacuum condition;

a second step of heating up an interior of said vacuum oven to the temperature 180° C. or so to let said charcoal produce carbon monoxide and water vapor;

a third step of sending said carbon monoxide of high temperature in a cooling tank to cool said carbon monoxide to room temperature or nearly room temperature;

a fourth step of separating said carbon monoxide from water vapor with a separating device to let water vapor gradually concentrate to water drops to be removed;

a fifth step of drawing said carbon monoxide in all air bag;

a sixth step of drawing said carbon monoxide from said air bag with a compressor in a marine food processing device, wherein said carton monoxide functions to settle iron contained in said marine food to remain in the meat of said marine food to keep fresh red color and freshness of said marine food.

US 6,331,323 B1

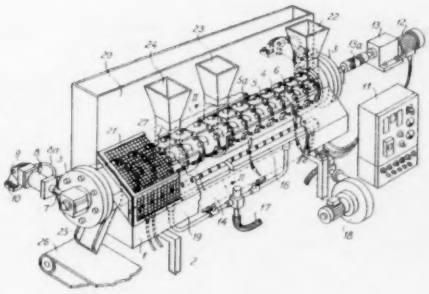
METHOD AND APPARATUS FOR STIR-FRYING

Jens Adler-Nissen, Sofievej 16 C, Hellerup DK-2900; Jens-Peter Jensen, Moelledalen, and Einar Dyhr, Skodsborgvej, all of Denmark, assignors to Jens Adler-Nissen, Hellerup, Denmark

Continuation of application No. PCT/DK98/00540, filed on Dec. 9, 1998. This application Jun. 7, 2000, Appl. No. 589,009. Claims priority, application Denmark, Dec. 9, 1997, 1430/97; Mar. 30, 1998, 00439/98; Nov. 6, 1998, 01442/98

Int. Cl. A23L *1/00;* **A47J** *27/00*

U.S. Cl. 426—523 **23 Claims**



1. A method of stir-frying discrete pieces or particles of one or more foodstuffs, the method comprising the steps of:

providing a heated surface;

supplying the discrete pieces to the heated surface for bringing them into direct heat conducting contact therewith,

providing mechanically driven stirring means,

stirring the discrete pieces so that the orientation of the discrete pieces with respect to the heated surface is altered such that various surface portions of the discrete pieces are brought into heat conducting contact with the heated surface;

providing scraping means adjacent the heated surface;

scraping substantially the entire area of the heated surface contacted by the discrete pieces so as to remove any layer of material originating from the foodstuffs and adhering to the heated surface; and

removing the discrete pieces from contact with the heated surface for transfer to a separate storing or processing means for said discrete pieces in stir-fried condition.

US 6,331,324 B1

SOYBEAN CURD PUREE, AND PROCESS AND APPARATUS FOR PREPARING THE SAME

Mamoru Tomita; Kazuyoshi Sotoyama, both of Kanagawa; Ryozo Watanabe, Tokyo; Kenji Mizuguchi, Kanagawa; Hideo Shidara, Tokyo; Shoji Wakao; Masanori Hattori, both of Kanagawa, and Nobuyuki Motoyoshi, Tokyo, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP98/03183, § 371 Date Jul. 14, 2000, § 102(e) Date Jul. 14, 2000, PCT Pub. No. WO99/35920, PCT Pub. Date Jul. 22, 1999

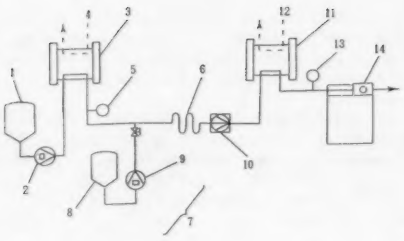
PCT Filed Jul. 15, 1998, Appl. No. 581,554

Claims priority, application Japan, Jan. 14, 1998, 10-018052; Mar. 5, 1998, 10-071372

Int. Cl. A23L *1/20*

U.S. Cl. 426—634 **8 Claims**

1. A tofu puree having the following physical and chemical properties (a) to (d):



(a) viscosity is 20 to 3000 mPa·s;

(b) dynamic storage modulus is 0.2 to 600 Pa;

(c) dynamic loss modulus is 0.2 to 250 Pa; and

(d) particles contained in the tofu puree have an average particle size of 2 to 15 μm and a 90% particle size of 35 μm or less.

US 6,331,325 B1

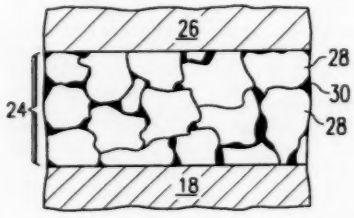
BARIUM STRONTIUM TITANATE (BST) THIN FILMS USING BORON

Bernard M. Kulwicki, North Attleboro, Mass., and Robert Tsu, Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1994, Appl. No. 315,454

Int. Cl. B05D *5/12*

U.S. Cl. 427—79 **10 Claims**



1. A method of forming a barium and/or strontium titanate dielectric film on a microelectronic device, said method comprising:

(a) preparing a precursor solution by combining a boron compound, a titanium compound, and a precursor selected from the group consisting of barium compounds, strontium compounds, and combinations thereof, such that the molar ratio of boron to titanium in said precursor solution is between 0.001 and 0.1;

(b) depositing and densifying one or more layers of said precursor solution to form a precursor film on said device; and

(c) annealing said precursor film in an oxygen-containing atmosphere, thereby forming said dielectric film comprising substantially uniformly distributed first and second phases, said first phase containing a plurality of barium and/or strontium titanate grains and said second phase principally comprising boron oxide, whereby said boron in said precursor apparently lowers the processing temperature required to produce said titanate grains, and whereby boron additionally decreases the dielectric leakage current observed for said dielectric film.

US 6,331,326 B1

METHOD FOR FORMING COATING FILM AND COATING COMPOSITION

Takeshi Tsunoda, Tokyo, and Shinji Mitsumune, Fujisawa, both of Japan, assignors to BASF NOF Coatings Co., Ltd., Yokohama, Japan

PCT No. PCT/JP99/01993, § 371 Date Dec. 7, 1999, § 102(e) Date Dec. 7, 1999, PCT Pub. No. WO99/54415, PCT Pub. Date Oct. 28, 1999

PCT Filed Apr. 14, 1999, Appl. No. 445,526

Claims priority, application Japan, Apr. 15, 1998, 10-104997; Jan. 29, 1999, 11-22409; Jan. 29, 1999, 11-022410

Int. Cl. B05D *1/02; 1/36; 5/06*

U.S. Cl. 427—202 **15 Claims**

1. A method for forming a coating film on a substrate comprising applying onto the substrate a primer (A) containing a flat pigment and a film-forming resin in a weight ratio of 0.1–40 parts by weight of flat pigment per 100 parts by weight of the film-forming resin and/or a first metallic paint (B) containing non-leafing aluminum flakes (a) having thicknesses in the range from 0.1 to 1 μm and an average flake diameter in the range from 1 to 60 μm and, then, applying thereonto a second metallic paint (C) containing small thin metal flakes (b) having thicknesses not greater than 0.08 μm and an average flake diameter in the range from 5 to 40 μm.

US 6,331,327 B1

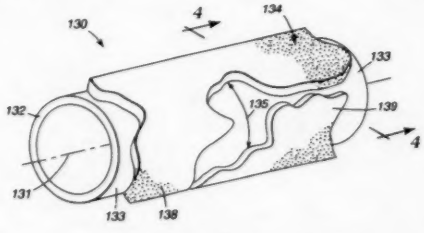
FAUX FINISH METHOD

Susan A. Jackson, Plymouth, and Martin L. Eull, Maple Grove, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.

Division of application No. 09/165,965, filed on Oct. 2, 1998, now Pat. No. 6,251,480. This application Sep. 15, 2000, Appl. No. 663,819.

Int. Cl. B05D *1/28*

U.S. Cl. 427—260 **17 Claims**



1. A method of creating a faux finish on a surface comprising the steps of:

a) providing an apparatus for creating a faux finish on a surface, the apparatus having a pair of roller covers that each include a core, a raised foam pattern mounted to the core and an outer surface, the core including a pair of core ends and a circumferential area between the pair of core ends, the foam pattern having a foam surface, a perimeter and distinct edges at least at the perimeter of the foam pattern, with the foam pattern sized, shaped and positioned to create adjacent edges and an irregular gap between the adjacent edges when the foam pattern is received on the core, the foam pattern covering a majority of the circumferential area of the core with a portion of the core being free of foam at least at the gap, resulting in a majority of the outer surface of each roller cover being the foam surface and in the outer surface being discontinuous;

b) loading first and second paints having at least one different visually perceptible characteristic onto the pair of roller covers, wherein the first paint is applied to one roller cover and the second paint is applied to the other roller cover; and

c) applying the first and second paints to a surface by moving the apparatus in an overlapping motion over the surface, blending the first and second paints on at least a portion of the

surface by movement of the foam surfaces of the foam patterns of the pair of roller covers over the surface and discharging the respective paints at the edges of each foam pattern as distinct but muted edge discharge marks, some of which appearing as at least fragmentary portions of an outline of the raised foam pattern, with the edge discharge marks of one foam pattern distinguishable from the edge discharge marks of the other foam pattern due to the different visually perceptible characteristic of the paint, the edge discharge marks combining with blended paint portions to produce the faux finish on the surface with at least some edge discharge marks overlaid upon the blended paint portions.

US 6,331,328 B1

METHOD FOR APPLYING SILKSCREEN PATTERN TO COOKWARE

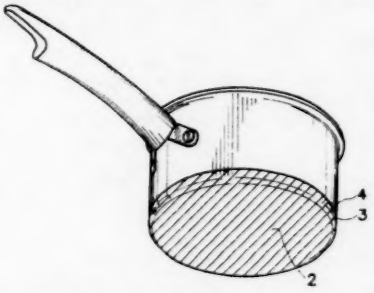
Stanley Kin-Sui Cheng, Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Meyer Mfg Co., Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China

Filed Jan. 7, 1999, Appl. No. 226,850

Claims priority, application United Kingdom, Jan. 9, 1998, 9800514

Int. Cl. B05D *1/32*

U.S. Cl. 427—261 **10 Claims**



1. A method for applying a pattern to a blank used to form a cookware product comprising the steps of:

a) applying a first coating of a silicon polyester material to one side of said blank;

b) baking said blank in a furnace at a first temperature;

c) applying a silkscreen paste of a silicon polyester material over said first coating in a desired pattern extending over at least a portion of said blank that is to form the base of said product and over a corner radius forming portion of said blank; and

d) baking said blank in a furnace at a second temperature, said second temperature being higher than said first temperature.

US 6,331,329 B1

SURFACE MODIFICATION USING HYDRIDOSILANES TO PREPARE MONOLAYERS

Thomas J. McCarthy, Hadley, Mass., and Alexander Y. Fadeev, Moscow, Russian Federation, assignors to University of Massachusetts, Boston, Mass.

Filed May 17, 1999, Appl. No. 313,051

Int. Cl. B05D *3/02;* **B32B** *15/08*

U.S. Cl. 427—387 **5 Claims**

1. A method of forming a monolayer-modified metal surface, the method comprising contacting a metal surface with a hydridosiloxane-containing polymer under conditions and for a time sufficient to form a covalent bond between at least one silicon atom of the polymer and an oxygen atom of a hydroxyl group on the metal surface, wherein the polymer has the formula $R^{dd}[—O—Si(R^{ee})(R^{ff})]_n—R^{gg}$, wherein R^{dd} is C_{1-6} alkyl and R^{gg} is C_{1-6} alkoxy or C_{1-6} alkyl, each of R^{ee} and R^{ff} is, independently H or C_{1-6} alkyl, and n is 10 to 1000.

US 6,331,330 B1

FILM OR COATING DEPOSITION AND POWDER FORMATION

Kwang-Leong Choy, Coventry, and Wei Bai, London, both of United Kingdom, assignors to Imperial College of Science, Technology, and Medicine, London, United Kingdom

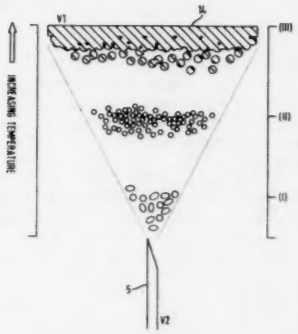
PCT No. PCT/GB96/03105, § 371 Date Dec. 21, 1998, § 102(e) Date Dec. 21, 1998, PCT Pub. No. WO97/21848, PCT Pub. Date Jun. 19, 1997

PCT Filed Dec. 16, 1996, Appl. No. 91,456

Claims priority, application United Kingdom, Dec. 14, 1995, 9525505; Aug. 16, 1996, 9617248; Sep. 13, 1996, 9619146

Int. Cl. B05D *1/04*

U.S. Cl. 427—475 **34 Claims**



1. A method of depositing a material onto a substrate, the method comprising the steps of:

pressure feeding a material solution comprising one or more precursor compounds, a solvent and a pH-modifying catalyst from a material solution supply to an outlet;

generating an electric field between the outlet and a substrate to provide a corona spray of droplets of the material solution and electrostatically guide the droplets from the outlet towards a surface of the substrate; and

providing a decreasing temperature gradient from the surface of the substrate to the outlet, which temperature gradient is such that evaporation of the solvent from, and decomposition of, the droplets occurs as the droplets approach the surface of the substrate.

US 6,331,331 B1

DECORATED POLYESTER TUBE PACKAGE FOR AQUEOUS COMPOSITIONS

Joel Millon, Westfield, N.J.; Kenneth Berger, Gainesville, Fla.; Robert Readdy, Hopatcong, and Derek Samaroo, Edison, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 29, 1999, Appl. No. 302,689

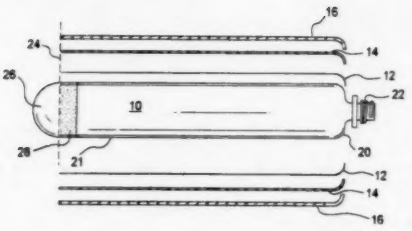
Int. Cl. H05H *1/32;* **B05D** *3/02;1/02;1/36*

U.S. Cl. 427—536 **25 Claims**

19. A method for preparing a polyester tube for packaging an aqueous composition comprising:

a) providing a tube package having a polyester tube body with a shoulder and nozzle at one end, at least said body having a tint of a first color;

b) applying a primer material as a coating to at least said tube body, said primer material adhering to a polyester surface of said tube package and capable of adhering to a coating material containing polyvinylidene chloride;



c) heating said primer material to cure said primer material onto said tube body whereby said primer material does not peel away from and flake off of the polyester surface of said tube body when a water containing composition is contained in said tube package and thereby cause a coating comprising polyvinylidene chloride to peel away from and flake off said tube body;

(d) applying a coating of a material containing polyvinylidene chloride onto the cured primer material to provide a moisture barrier for at least tube body whereby said polyvinylidene chloride-containing material develops a tint of a second color, said first color being such that when said polyvinylidene chloride-containing material develops a tint of such second color, said first color and said second color mix to cancel said second color and yield no color; and

(e) heating said polyvinylidene chloride-containing material to cure said polyvinylidene chloride-containing material and to adhere said polyvinylidene chloride containing material to said primer material.

US 6,331,332 B1

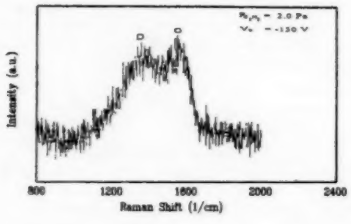
PROCESS FOR DEPOSITING DIAMOND-LIKE CARBON FILMS BY CATHODIC ARC EVAPORATION

Da-Yung Wang, 4th Floor, 295-2, Da-Jing Street, Taichung, Taiwan

Filed Nov. 5, 1999, Appl. No. 434,139

Int. Cl. H05H *1/24*

U.S. Cl. 427—576 **15 Claims**



1. A process for depositing a diamond-like carbon (DLC) film on a substrate comprising the steps of:

a) providing a vacuum reaction chamber and placing the substrate therein;

b) placing a metal arc source in the vacuum chamber;

c) forming an electrical bias on the substrate of between −100 V and −300 V;

d) feeding hydrocarbon gases into the vacuum reaction chamber with a partial pressure of between 0.5 Pa and 5.0 Pa; and,

e) carrying out a cathodic arc evaporation (CAE) process to deposit a DLC film doped with metal from the metal arc source on the substrate.

US 6,331,333 B1

STORAGE STABILIZED OXYGEN DEGRADABLE POLYMER

Chi-San Wu, Wayne; Laurence Senak, West Orange; Donna Osborne, Saddle River; James F. Curry; Charles B. Schriver, both of Wayne, and Irwin B. Silverstein, Piscataway, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Sep. 16, 1998, Appl. No. 153,943

Int. Cl. B65B *55/02*

U.S. Cl. 428—35.7 **15 Claims**

1. A packaged oxygen degradable, particulate vinyl pyrrolidone polymer wherein said polymer is poly(N-vinyl pyrrolidone) having a K-value of 60 to 150 stabilized to less than 300 ppm peroxides formation and against K-value degradation during storage consisting essentially of said particulate polymer sealed within a receptacle having substantially oxygen impermeable walls less than 3.5 cc/100 square inch/24 hours/3 mil wall thickness and an air permeable package containing a pliable oxygen scavenger moistened with 1 gram of water/1 to 10 grams of scavenger also sealed within said receptacle and in open communication with said polymer particles within said receptacle.

US 6,331,334 B1

CONTAINER LINER

Peter Trepte, Emsdetten, and Guenter Luettgens, Odenthal, both of Germany, assignors to Empac Verpackungs GmbH, Emsdetten, Germany

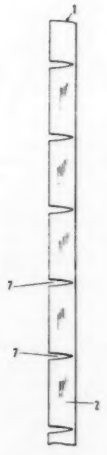
PCT No. PCT/EP97/02189, § 371 Date Oct. 27, 1998, § 102(e) Date Oct. 27, 1998, PCT Pub. No. WO97/42103, PCT Pub. Date Nov. 13, 1997

PCT Filed Apr. 28, 1997, Appl. No. 171,869

Claims priority, application Germany, May 3, 1996, 196 17 902

Int. Cl. B65D *35/14;81/00*

U.S. Cl. 428—35.7 **29 Claims**



1. A flexible container, comprising:

a bulk goods container including conductive structures for dissipating electrostatic charges; and

at least one liner wall comprised of at least one layer, said at least one layer including at least one non-conductive layer, at least one of said at least one layer having microrecesses extending partially through a thickness thereof.

US 6,331,335 B1

SELF-ADHESIVE WIRE STRAP AND METHODS OF CONSTRUCTING AND UTILIZING SAME

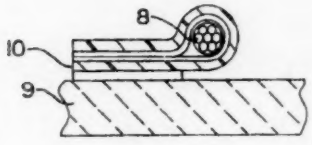
Christopher S. Autterson, Novi, Mich., assignor to Argent Automotive Systems, Inc., Novi, Mich.

Continuation of application No. 08/500,099, filed on Jul. 10, 1995, now abandoned. This application May 14, 1997, Appl. No. 856,047.

This patent is subject to a terminal disclaimer.

Int. Cl. B32B *3/02*

U.S. Cl. 428—40.1 12 Claims



1. A self-adhesive strap device at least partially limiting movement of a wire relative to a substantially planar external member, comprising, in combination:

a strap member having a first predetermined major surface on one side thereof, and a second predetermined major surface on a side opposite said one side;

said strap member comprising a high strength flexible film fabricated from a material selected from the group consisting of a metallic foil, a polypropylene, and a polyester;

first securement means disposed on only a predetermined portion of said first predetermined major surface of said strap member permanently securing said strap member to said substantially planar external member, said predetermined portion consists of a minor portion of said first predetermined major surface;

second securement means comprises adhesive which is disposed directly on said second predetermined major surface of said strap member at least partially limiting movement of said wire relative to said strap member and permanently holding said wire; and

said strap member being flexible with a first predetermined portion of said second predetermined major surface secured to a second portion of said second predetermined major surface so that said first and second portions of said second predetermined major surface are separated by a distance no greater than the thickness of said second securement means, and thereby at least partially limiting movement of said wire relative to said substantially planar external member and permanently affixing said wire to said substantially planar external member.

US 6,331,336 B1

MULTILAYER ADHESIVE TAPE

Bodo Szonn, Kisdorf, and Werner Kluge-Paletta, Buchholz, both of Germany, assignors to Beiersdorf AG, Hamburg, Germany

Filed Apr. 21, 1998, Appl. No. 63,659

Claims priority, application Germany, Apr. 23, 1997, 197 16 995

Int. Cl. B32B *25/08;27/22*

U.S. Cl. 428—40.1 11 Claims

1. Single- or double-sidedly self-adhesively treated adhesive tape having an elastomeric backing layer, wherein

a) the elastomer of the backing layer consists essentially of a styrene-butadiene copolymer blended with an anti-ageing agent and a plasticzer,

b) a self-adhesive composition is applied to one or both sides of the backing layer, and wherein, between the backing layer and the self-adhesive composition there is

c) an interlayer comprising polyphenylene ether, to prevent migration of the anti-ageing agent and plasticizer from the backing layer into the self-adhesive composition.

US 6,331,337 B1

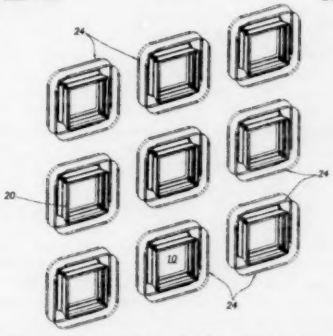
BONDING BUILDING BLOCKS USING ADHESIVE TAPES

Bryan Woodrow Osborn, 407 Mignon St., Houston, Tex. 77024, and Jay Dwain Etheredge, 1007 Briarwild La., Houston, Tex. 77080

Filed Jan. 14, 2000, Appl. No. 482,600

Int. Cl. B32B *3/00*

U.S. Cl. 428—61 22 Claims



1. A constructed self-sustaining building member, comprising in combination

a number of adjacent, separate, shaped solids;

a corresponding number of flexible double-sided adhesive tape strips bonding said adjacent shaped solids; and

said self-sustaining building member having a pattern of adhesive tape joints between said adjacent shaped solids, and said adhesive tape strips being substantially entirely confined inside said joints.

US 6,331,338 B1

AMORPHOUS ALLOY OF LIGHT RARE EARTH-TRANSITION METAL AND SEMI-METAL, MAGNETO-OPTICAL RECORDING LAYER MADE OF THE ALLOY, AND MAGNETO-OPTICAL DISK ADOPTING THE LAYER

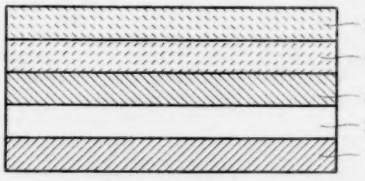
Jai-young Kim, Kunpo, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Oct. 28, 1996, Appl. No. 738,837

Claims priority, application Rep. of Korea, Oct. 28, 1995, 95-37773; Oct. 31, 1995, 95-39037; Oct. 18, 1996, 96-46847

Int. Cl. B32B *15/00;15/18;* G11B *11/00;11/10*

U.S. Cl. 428—64.3 8 Claims



3. A magneto-optical disk for short wavelengths of about 400 nm, comprising:

a substrate;

a reflection preventing layer made of dielectric material on the substrate;

a magneto-optical recording layer on said reflection preventing layer which includes an amorphous alloy of 20 to 30 atomic % of at least one light rare earth metal comprising Nd, at least two transition metals comprising Fe and Co and a semi-metal comprising 0.5 to 5 atomic % B with respect to said alloy, and wherein said magneto-optical recording layer has a magnetic anisotropy energy in the range of about −3.5 to about 4.5×106 ergs/cm^3, a Kerr rotation angle in the range of about 0.05 to about 1.6 degrees at about 400 nm, and a Curie temperature in the range of about 160° C. to about 190° C.;

a protection layer on said magneto-optical recording layer, for protecting said magneto-optical recording layer; and

a reflection layer on said protection layer.

US 6,331,339 B1

WOOD LAMINATE AND METHOD OF MAKING

Richard Emil Kajander, Toledo, Ohio, assignor to Johns Manville International, Inc., Denver, Colo.

Division of application No. 08/728,655, filed on Oct. 10, 1996, now Pat. No. 5,837,620. This application May 27, 1998, Appl. No. 85,120.

Int. Cl. B32B *5/12*

U.S. Cl. 428—114 **12 Claims**

1. A laminate sandwich comprised of wood or a wood product in contact with a glass fiber nonwoven mat comprising glass fibers bonded together with about 15–75 weight percent of a resin binder wherein the resin binder is derived from an aqueous resin selected from a group consisting of furfuryl alcohol formaldehyde based resin, phenol formaldehyde resin and melamine formaldehyde resin and mixtures thereof, which resin is only partially cured to a "B" stage condition.

US 6,331,340 B1

HONEYCOMB STRUCTURE AND METHOD FOR PREPARING THE SAME

Hajime Noguchi, and Takaya Komine, both of Akishima, Japan, assignors to Showa Aircraft Industry Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1999, Appl. No. 456,475

Claims priority, application Japan, Dec. 10, 1998, 10-351509

Int. Cl. B32B *3/12*

U.S. Cl. 428—116 **4 Claims**

1. A honeycomb structure comprising a supporting base of glass fibers impregnated with a polyamide imide resin prepolymer, wherein the supporting base of glass fibers has a tensile strength in crosswise direction that is 105 to 150% of that in lengthwise direction.

US 6,331,341 B1

MULTIAXIAL PRESS FABRIC HAVING SHAPED YARNS

Michael J. Joyce, Clifton Park, N.Y., assignor to Albany International Corp., Albany, N.Y.

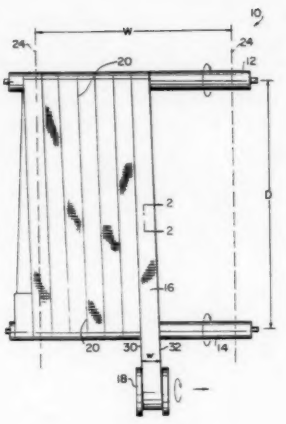
Filed Jul. 9, 1999, Appl. No. 350,398

Int. Cl. B28B *3/10*; **D21F** *3/00*

U.S. Cl. 428—138 **33 Claims**

1. A multiaxial press fabric for the press section of a paper machine, said multiaxial press fabric comprising:

a base fabric, said base fabric having a first layer, said first layer comprising a first fabric strip, said first fabric strip being woven from lengthwise and crosswise yarns wherein at least one of said lengthwise and crosswise yarns are shaped yarns, said first fabric strip having a first lateral edge and a second lateral edge, said first fabric strip being spirally wound in a plurality of contiguous turns wherein said first lateral edge in a turn of said first fabric strip abuts said second lateral edge of an adjacent turn thereof, thereby forming a helically continuous seam separating adjacent turns of said first fabric strip,



said helically continuous seam being closed by attaching abutting first and second lateral edges of said first fabric strip to one another, thereby providing said first layer and said base fabric in the form of an endless loop having a machine direction, a cross-machine direction, an inner surface and an outer surface; and

a plurality of layers of staple fiber material attached to one of said inner and outer surfaces of said base fabric,

wherein said shaped yarns are monofilament yarns of a non-circular cross section, wherein said non-circular cross section is of a substantially rectangular shape, and wherein said shaped yarns are perforated.

US 6,331,342 B1

MAGNETIC RECORDING MEDIUM

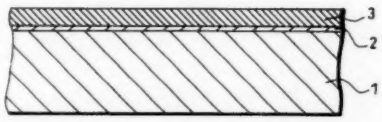
Satoru Inoue, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 7, 1997, Appl. No. 889,088

Claims priority, application Japan, Jul. 8, 1996, 8-178135

Int. Cl. G11B *5/738*

U.S. Cl. 428—141 **5 Claims**



10

1. A magnetic recording medium comprising:

a nonmagnetic supporting base having a surface roughness ranging from 8.0 nm to 15 nm;

a nonmagnetic layer coated on said nonmagnetic supporting base, the nonmagnetic layer including at least two kinds of carbon black as the only nonmagnetic particles in said nonmagnetic layer, the carbon black having a mean particle size of less than 50 nm and having a thickness, obtained after the nonmagnetic layer is dried, ranging from greater than 0 μm to 0.5 μm but thicker than the mean particle size of the carbon black; and

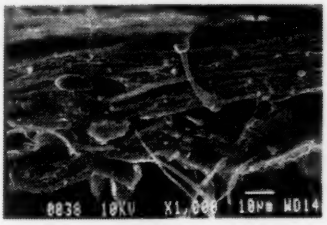
a magnetic layer coated on said nonmagnetic layer, the magnetic layer having a thickness, after the magnetic layer is dried, ranging from 0.5 μm to 2.0 μm.

US 6,331,343 B1

FILMS HAVING A FIBRILLATED SURFACE AND METHOD OF MAKING

Mario A. Perez, Burnsville; Sundaravel Damodaran, and Michael D. Swan, both of Maplewood, all of Minn., assignors to 3M Innovative Properties Company, St. Paul, Minn.

Filed May 7, 1999, Appl. No. 307,577
Int. Cl. B32B *5/24*
U.S. Cl. 428—141 18 Claims



1. An oriented film comprising a melt-processed immiscible mixture comprising a semicrystalline polymer component and a void initiating component, said film having at least one microfibrillated surface, wherein said surface is microfibrillated by imparting sufficient fluid energy to at least one surface of said film.

US 6,331,344 B1

BIAXIALLY ORIENTED POLYESTER FILM

Iwao Okazaki, Kyoto; Yukari Nakamori; Shozi Nakajima, both of Shiga; Akira Kubota, and Yuri Shirakawa, both of Shiga, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP98/02590, § 371 Date Aug. 16, 1999, § 102(e) Date Aug. 16, 1999, PCT Pub. No. WO99/17931, PCT Pub. Date Apr. 15, 1999
PCT Filed Jun. 12, 1998, Appl. No. 319,198
Claims priority, application Japan, Oct. 3, 1997, 9-271343; Feb. 16, 1998, 10-033059
Int. Cl. B32B *27/08;27/20;27/36*
U.S. Cl. 428—141 20 Claims

1. A biaxially oriented polyester film characterized in that said polyester film comprises at least one film layer composed predominantly of polypropylene terephthalate and has a heat shrinkage of 0.8% or below after standing at 80° C. for 30 minutes, wherein said polyester film has an X/Y ratio of 5 or above where X denotes the number of protrusions defined on the surface of said propylene terephthalate-predominated film layer, and Y denotes the number of particles contained in said propylene terephthalate-predominated film layer.

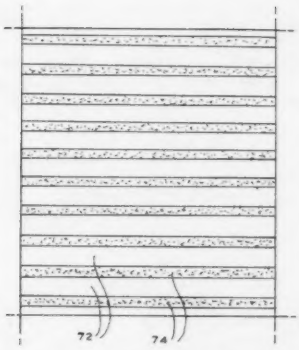
US 6,331,345 B1

NONWOVEN FABRIC WITH HIGH CD ELONGATION AND METHOD OF MAKING SAME

Michael Kauschke, Rimsting, Germany, and Mordechai Turi, Princeton Junction, N.J., assignors to First Quality Nonwovens, Inc., State College, Pa.

Continuation-in-part of application No. 09/373,826, filed on Aug. 13, 1999. This application Dec. 13, 1999, Appl. No. 460,659.
Int. Cl. B32B *5/12;3/02*
U.S. Cl. 428—156 3 Claims

1. A nonwoven fabric of substantially randomly oriented continuous spun fibers formed into a single sheet wherein the density of the fabric formed by the spun fibers varies between strips of relatively high density and strips of relatively low density, the strips extending along the length of the fabric in the machine direction in an alternating pattern with the high density strips separated from each other by low density strips, the alternatively



high density and low density strips providing the fabric with a higher percent elongation in the cross direction than in the machine direction.

US 6,331,346 B1

INK RECEPTIVE COEXTRUDED FILM

Pang-Chia Lu, Pittsford, and Michael Dale Cleckner, Honeoye, both of N.Y., assignors to ExxonMobil Oil Corporation, Fairfax, Va.

Filed Sep. 10, 1998, Appl. No. 151,129
Int. Cl. B32B *3/00*
U.S. Cl. 428—195 5 Claims

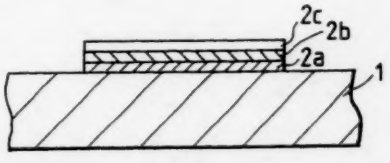
1. An ink-based-image-bearing substrate comprising a coextruded polypropylene-containing layer which is oriented in at least the machine direction, an acidic functional group-bearing polymer-containing layer, wherein said acidic functional group-bearing polymer-containing layer has a softening point in a range of 180°–220° F.; and an ink image electrostatically printed on said acidic functional group-bearing polymer-containing layer by liquid toner.

US 6,331,347 B2

METHOD FOR FORMING A GOLD PLATING ELECTRODE A SUBSTRATE BASED ON THE ELECTRODE FORMING METHOD, AND A WIRE BONDING METHOD UTILIZING THIS ELECTRODE FORMING METHOD

Hiroshi Haji, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., LTD, Osaka, Japan

Division of application No. 08/604,072, filed on Feb. 20, 1996, now Pat. No. 5,762,008. This application Apr. 1, 1998, Appl. No. 52,979.
Claims priority, application Japan, Feb. 20, 1995, 7-31223
Int. Cl. B32B *3/00*
U.S. Cl. 428—209 8 Claims



1. A substrate comprising:
a circuit pattern formed on a surface of said substrate;
a nickel-containing barrier metal layer formed at a portion where an electrode of said circuit pattern is formed;

a gold layer formed on said barrier metal layer by plating to a thickness of at least 5 nm and less than 100 nm,

wherein said substrate is heated up to cause nickel contained in said gold layer to move toward a surface zone of said gold layer to deposit nickel compound in said surface zone of said gold layer so that the fineness of a remaining part of said gold layer is enhanced at, at least, an inside zone immediately below said surface zone, and said surface zone containing said nickel compound is removed to expose a purified gold surface of said inside zone of said gold layer having a ratio of nickel to gold concentration of less than 0.05.

US 6,331,348 B1

SUBSTRATE HAVING REPAIRED METALLIC PATTERN AND METHOD AND DEVICE FOR REPAIRING METALLIC PATTERN ON SUBSTRATE

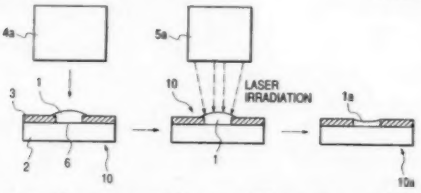
Osamu Sakai, Miyagi-ken, and Keiji Takagi, Fukushima-ken, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1998, Appl. No. 173,532

Claims priority, application Japan, Oct. 20, 1997, 9-286910; Sep. 18, 1998, 10-264180

Int. Cl. B32O *3/00*

U.S. Cl. 428—209 **13 Claims**



1. A substrate comprising a metallic pattern containing a repaired defect, wherein the repaired defect includes a metal thin-film deposited from a metallic organic compound, and wherein the metallic organic compound comprises a material that selectively absorbs laser radiation energy.

US 6,331,349 B1

FORM-IN-PLACE EMI GASKETS

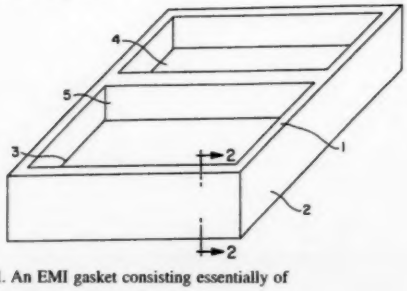
John P. Kalinoski, Chelmsford, Mass., and Michael H. Bunyan, Derry, N.H., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of application No. 08/967,986, filed on Nov. 12, 1997, now Pat. No. 6,096,413, which is a continuation of application No. 08/421,847, filed on Mar. 14, 1995, now abandoned, which is a division of application No. 08/119,403, filed on Sep. 10, 1993, now abandoned. This application Jan. 5, 2000, Appl. No. 478,017.

This patent is subject to a terminal disclaimer.

Int. Cl. H05K *9/00*

U.S. Cl. 428—220 **7 Claims**



1. An EMI gasket consisting essentially of

a polyester having isocyanate of trialkoxy silyl end groups capable of chemically reacting with each other at room temperature in the presence of moisture to form a derivative polymer having a longer chain length than the polyester; and

at least one electrically conductive filler intimately mixed with the derivative polymer to form a composition which, when maintained in the absence of moisture and other hydrogen donor materials, is a readily extrudable and otherwise conventionally moldable thermoplastic material which, upon exposure to moisture at room temperature, becomes essentially thermosetting,

said gasket having a Shore A hardness of from about 5 to about 60, a force/deflection value of from about 0.2 pounds/inch to 15.0 pounds/inch, an electrical resistance value of from about 0.005 ohms to 0.1 ohms, a compression set value of from about 5% to about 50%, and an EMI shielding effectiveness of from about 10 dbs to about 120 dbs at a frequency range of from about 10 MHz to about 10 GHz.

US 6,331,350 B1

POLYCARBOXY/POLYOL FIBERGLASS BINDER OF LOW PH

Thomas J. Taylor, Englewood; Derek C. Bristol, Boulder, both of Colo., and Paul Nedwick, Lansdale, Pa., assignors to Johns Manville International, Inc., Denver, Colo., and Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 2, 1998, Appl. No. 165,604

Int. Cl. B32B *7/02;* **C08F** *20/00*

U.S. Cl. 428—221 **24 Claims**

1. The fiberglass binder, comprising an aqueous solution of

a polycarboxy polymer having a number average base molecular weight of less than 5,000, and

a polyol,

with the pH of the binder being no greater than 3.5.

US 6,331,351 B1

CHEMICALLY ACTIVE FILTER MATERIAL

Michelle Waters, Altoona, Wis., and Marc Plinke, Elkton, Md., assignors to Gore Enterprise Holdings, Inc., Newark, Del.

Filed Sep. 22, 1999, Appl. No. 401,594

Int. Cl. B32B *7/12;* **B01J** *23/00*

U.S. Cl. 428—317.7 **23 Claims**

1. An article comprising:

a porous substrate having active particles adhered to the surface of said substrate by a polymer adhesive which comprises (a) strings of polymer, and (b) dispersion primary polymer particles, whereby the active particles are tethered by the adhesive.

US 6,331,352 B1

CORRECTION TAPE HAVING DYE MIGRATION BLOCKING PROPERTIES

Creg G. Bradley, Simpsonville; Teresa B. Hopper, Belton, and Peter D. Gabriele, Simpsonville, all of S.C., assignors to Bic Corporation, Milford, Conn.

Filed Aug. 13, 1999, Appl. No. 373,908

Int. Cl. C09J *7/02;* **B32B** *7/12*

U.S. Cl. 428—354 **16 Claims**

1. A correction tape comprising:

a first layer which is a support member with sufficient rigidity to hold at least a second, third, and fourth layer;

the second layer comprising a correction medium layer;

the third layer comprising a dye migration barrier; and

the fourth layer comprising a pressure sensitive adhesive layer present in sufficient amount to form a layer of a thickness to adhere the second and third layer to a substrate,

wherein the second and third layers are interposed between the first and fourth layers.

US 6,331,353 B1

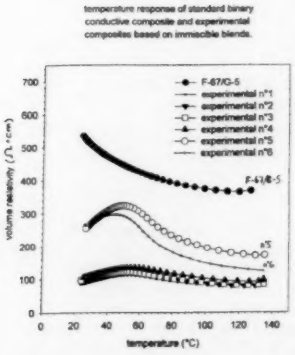
STRANDED CONDUCTOR FILLING COMPOUND AND CABLES USING SAME

Stephen H. Foulger, Lexington, S.C., assignor to Pirelli Cables and Systems LLC, Lexington, S.C.

Filed Aug. 17, 1999, Appl. No. 375,717

Int. Cl. B32B *15/00;* **H01B** *1/06;11/02*

U.S. Cl. 428—379 **21 Claims**



1. A filling composition for filling interstices between a plurality of wires of a conductor comprising:

a minor phase polymeric material;

a conductive filler dispersed in said minor phase material in an amount sufficient to generate a continuous conductive network in said minor phase material;

a major phase material comprised of a low molecular weight polymer, said minor phase material with said conductive filler dispersed therein dispersed in said major phase material in an amount sufficient to generate a continuous conductive network in said major phase material, said major phase material and said minor phase material being such that when mixed together do not engage in electrostatic interactions which promote miscibility, and

a water swellable material, said water swellable material being admixed with said filling composition and said filling composition being pumpable at elevated temperatures of about greater than 100° C.

US 6,331,354 B1

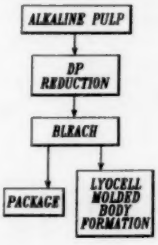
ALKALINE PULP HAVING LOW AVERAGE DEGREE OF POLYMERIZATION VALUES AND METHOD OF PRODUCING THE SAME

James E. Sealey, II, Federal Way; W. Harvey Persinger, Jr., Enumclaw; Mengkui Luo, Tacoma; Vincent A. Roscelli, Edgewood, and Amar N. Neogi, Seattle, all of Wash., assignors to Weyerhaeuser Company, Federal Way, Wash.

Continuation-in-part of application No. 09/256,197, filed on Feb. 24, 1999, now Pat. No. 6,210,801, which is a continuation-in-part of application No. 09/185,423, filed on Nov. 3, 1998, which is a continuation-in-part of application No. 09/039,737, filed on Mar. 16, 1998, now Pat. No. 6,235,392, which is a continuation-in-part of application No. 08/916,652, filed on Aug. 22, 1997, now abandoned, Provisional application No. 60/023,909, filed on Aug. 23, 1996, Provisional application No. 60/024,462, filed on Aug. 23, 1996. This application May 18, 2000, Appl. No. 574,538.

Int. Cl. B32B *23/00*

U.S. Cl. 428—393 **18 Claims**



1. A pulp comprising:

a treated alkaline pulp comprising:

(a) at least 7% by weight hemicellulose;

(b) cellulose having an average degree of polymerization of from about 200 to about 1100;

(c) a copper number of less than about 2.0; and

(d) a ΔR less than about 2.8.

US 6,331,355 B1

ROLLABLE, SINGLE-COATED HOT MELT ADHESIVE FILM WITH NO INTERLAYER

Heiko Tebbe, Schwetzingen; Ralf Schledjewski, Hodenhagen, and Dirk Schultze, Fallingbostel, all of Germany, assignors to Wolff Walsrode AG, Walsrode, Germany

PCT No. PCT/EP98/03344, § 371 Date Dec. 9, 1999, § 102(e) Date Dec. 9, 1999, PCT Pub. No. WO98/58036, PCT Pub. Date Dec. 23, 1998

PCT Filed Jun. 4, 1998, Appl. No. 445,718

Claims priority, application Germany, Jun. 17, 1997, 197 255 38

Int. Cl. B32B *27/18;27/34;27/36;* **C09J** *177/00;177/06;177/12;7/00*

U.S. Cl. 428—409 **10 Claims**

1. A monolayered thermoplastic hot-melt adhesive film comprising:

(a) a polymer matrix consisting essentially of at least one of copolyamides and copolyesters; and

(b) an additive combination of,

(i) 0.4 wt. % to 8.0 wt. % of a spacer,

(ii) 0.05 wt. % to 1.0 wt. % of a separating and lubricating agent, and

(iii) optionally up to 1 wt. % of a soap, each wt. % being with respect to the total mixture,

wherein said adhesive film is free of a separating layer, and said adhesive film can be rolled up and unrolled without the additional use of said separating layer.

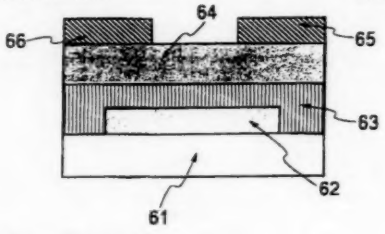
US 6,331,356 B1
PATTERNS OF ELECTRICALLY CONDUCTING POLYMERS AND THEIR APPLICATION AS ELECTRODES OR ELECTRICAL CONTACTS

Marie Angelopoulos, Cortlandt Manor; Christos Dimitrios Dimitrakopoulos, West Harrison, both of N.Y.; Bruce Kenneth Furman, Williston, Vt.; Teresita Ordonez Graham, Irvington, and Shui-Chih Alan Lien, Briarcliff Manor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application No. 08/476,141, filed on Jun. 7, 1995, which is a division of application No. 08/193,926, filed on Feb. 9, 1994, now Pat. No. 5,721,299, which is a continuation-in-part of application No. 07/357,565, filed on Dec. 16, 1994, now Pat. No. 5,198,153, application No. 09/113,807, filed on Jul. 9, 1998, which is a continuation-in-part of application No. 09/036,458, filed on Mar. 6, 1998, now abandoned, and a continuation-in-part of application No. PCT/US97/20862, filed on Nov. 10, 1997, Provisional application No. 60/040,129, filed on Mar. 7, 1997, Provisional application No. 60/030,501, filed on Nov. 12, 1996, Provisional application No. 60/040,628, filed on Mar. 7, 1997, Provisional application No. 60/040,159, filed on Mar. 7, 1997, Provisional application No. 60/040,130, filed on Mar. 7, 1997, Provisional application No. 60/040,132, filed on Mar. 7, 1997, Provisional application No. 60/040,131, filed on Mar. 7, 1997. This application Jul. 9, 1998, Appl. No. 113,807.

Int. Cl. B32B *9/04;27/06;13/04;15/08;* **H01L** *51/40*

U.S. Cl. 428—411.1 **32 Claims**



20. A structure comprising;

a semiconductor layer;

a first opening in a dielectric layer exposing said semiconductor layer therein at a first region;

a second opening in said dielectric layer exposing said semiconductor layer therein at a second region;

a first pattern of an electrical conductor disposed in electrical contact with said first region;

a second pattern of an electrical conductor disposed in electrical contact with said second region;

a third pattern of an electrical conductor disposed on said dielectric layer between said first and said second patterns;

at least one of said first, said second and said third pattern of an electrical conductor is a patterned electrically conductive polymer.

US 6,331,357 B1
ARTICLES WITH STABLE COATINGS HAVING TAILORABLE OPTICAL PROPERTIES

Mark M. Hasegawa, Somerville, Mass.; Steven A. Daneman, Westminster, Calif.; Ronaldo R. DeJesus, Los Angeles, Calif., and Henry W. Babel, Huntington Beach, Calif., assignors to McDonnell Douglas Corporation, Huntington Beach, Calif.

Filed Apr. 25, 1994, Appl. No. 232,627

Int. Cl. B32B *27/06*

U.S. Cl. 428—446 **18 Claims**

1. A coated article, comprising:

an article having a surface; and

a multicomponent coating on at least a portion of the surface of the article, the coating comprising a mixture of a low absorptance pigment, a low emittance material, a binder, and, optionally, a high absorptance pigment, each of the components of the coating being stable when exposed to a space environment.

10. The coated article of claim **1**, wherein the binder is selected from the group consisting of potassium silicate, sodium silicate, and lithium polysilicate.

US 6,331,358 B1
WET FRICTION MATERIAL AND PROCESS FOR PRODUCING THE SAME

Shun Kitahara; Fumimasa Muramatsu, and Shigeki Umezawa, all of Shizuoka, Japan, assignors to NSK-Warner Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1999, Appl. No. 261,203

Claims priority, application Japan, Mar. 3, 1998, 10-050923

Int. Cl. B32B *5/16;* **F16D** *11/00*

U.S. Cl. 428—447 **10 Claims**

1. A wet friction material comprising:

a fiber base material;

a filler;

a friction adjusting agent; and

a thermosetting resin;

wherein said wet friction material is prepared by mixing a paper-forming solid thermosetting resin with a fiber base material as at least a part of a filler to form a paper, impregnating said paper with a liquid thermosetting resin, and applying heat to said paper so as to be hardened, wherein at least a part of said liquid thermosetting resin is made of a silicone resin represented by the following average composition formula, and the amount of trifunctional unit monomers, $RSiO_{3/2}$ in which R represents a monovalent hydrocarbon group, in monomers constituting said silicone resin is from 40 to 100 mol %:

$$(R^1)_a(OR^2)_bSiO_{(4-a-b)/2}$$

wherein R^1 represents a monovalent hydrocarbon group, R^2 represents a hydrogen atom or $C_{1\text{-}10}$ organic group; and the suffixes a and b represent a positive number satisfying the relationships $0.2 \leqq a \leqq 1.8$ and $0 < b \leqq 1.9$.

US 6,331,359 B1
GAS-IMPERMEABLE ELASTIC MEMBRANE AND HYDROPNEMATIC ACCUMULATOR EQUIPPED WITH THIS MEASURE

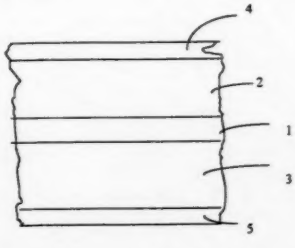
Yves Germain, Serquigny; Jean-Luc Beal, Voisins-le-Bretonneux, and Christophe Le Roy, Evreux, all of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Feb. 17, 1998, Appl. No. 24,313

Claims priority, application France, Feb. 17, 1997, 97 01803

Int. Cl. B32B *27/32*

U.S. Cl. 428—476.3 **8 Claims**



1. A gas-impermeable elastic membrane, said membrane comprising at least:

(a) a co-polymeric gas-impermeable film including OH groups; and

(b) two layers of a supple and elastic material of a co-polymer containing blocks of polyamides and blocks of polyethers, said film being positioned between said layers.

US 6,331,360 B1

THERMOPLASTIC ELASTOMER COMPOSITION AND POWDER AND MOLDED ARTICLE THEREOF

Hiroyuki Sugimoto, Funabashi; Yoshihiro Nakatsuji, Chiba, and Hidetake Hozumi, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

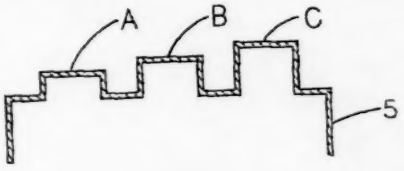
PCT No. PCT/JP97/00794, § 371 Date Sep. 14, 1998, § 102(e) Date Sep. 14, 1998, PCT Pub. No. WO97/33940, PCT Pub. Date Sep. 18, 1997

PCT Filed Mar. 15, 1997, Appl. No. 142,691

Claims priority, application Japan, Mar. 15, 1996, 8-059102; May 20, 1996, 8-124462; May 15, 1996, 8-120354; May 15, 1996, 8-120355; May 15, 1996, 8-120358

Int. Cl. B32B *27/32*

U.S. Cl. 428—523 **21 Claims**



1. A thermoplastic elastomer composition comprising:

a) 100 wt. parts of a polyolefin resin,

b) 5 to 250 wt. parts of ethylene-α-olefin copolymer rubber in which the content of the α-olefin units is 60–90 wt. %, wherein the wt. percent is with respect to the weight of the ethylene-α-olefin copolymer rubber, and

c) 5 to 400 wt. parts of an ethylene-α-olefin copolymer rubber in which the content of the α-olefin units is 5 to 40 wt. %, wherein the wt. % is with respect to the weight of the ethylene-α-olefin copolymer rubber.

US 6,331,361 B1

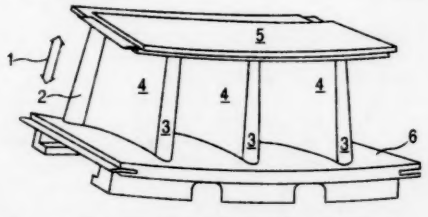
METHODS FOR MANUFACTURE AND REPAIR AND RESULTING COMPONENTS WITH DIRECTIONALLY SOLIDIFIED OR SINGLE CRYSTAL MATERIALS

Hans van Esch, Seabrook, and Wayne Greaves, Houston, both of Tex., assignors to Hickham Industries, Inc., La Porte, Tex.

Continuation of application No. 09/196,081, filed on Nov. 19, 1998, now abandoned. This application Jul. 6, 2000, Appl. No. 611,200.

Int. Cl. F04D *29/30;* **B23P** *6/00;* **B23K** *31/02*

U.S. Cl. 428—548 **16 Claims**



1. A method for manufacturing, comprising the steps of:

providing a component composed of equiaxed cast or wrought alloys; and

joining at least one section composed of directionally solidified or single crystal material to the component by using a filler material disposed therebetween.

US 6,331,362 B1

REFRACTORY COMPOSITE MATERIALS PROTECTED AGAINST OXIDISING AT HIGH TEMPERATURE, PRECURSORS OF THE SAID MATERIALS, THEIR PREPARATION

Pascal Dupel, Roon Twp, Pa., and Jean-Bernard Veyret, Ez Bergen, Netherlands, assignors to European Atomic Energy Community (EUROTOM), Luxembourg, Luxembourg

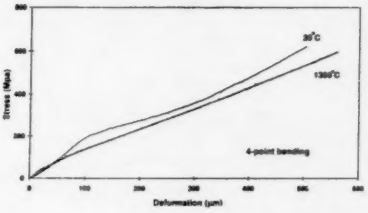
PCT No. PCT/FR97/01084, § 371 Date Apr. 21, 1999, § 102(e) Date Apr. 21, 1999, PCT Pub. No. WO97/48663, PCT Pub. Date Dec. 24, 1997

PCT Filed Jun. 16, 1997, Appl. No. 147,413

Claims priority, application Luxembourg, Jun. 19, 1996, 88773

Int. Cl. B32B *9/00*

U.S. Cl. 428—689 **17 Claims**



1. Composite materials having a highly refractive ceramic matrix reinforced by fibers that are sensitive to oxygen at low temperature, said composite materials being made by a solid process from said fibers and a slip containing ceramic powder and at least one densification additive, said materials comprising over their entire outer surface;

either at least one layer of a precursor of borosilicate glass;

or a layer of borosilicate glass;

or a layer containing at least one silicate corresponding to said at least one densification additive; silica; and a vitreous boron-containing silicate phase; said layer protecting said composite materials in an oxidizing atmosphere, even at high temperature;

said composite materials having at least one of said layers at different stages in the implementation of treatment for the purpose of protecting them against being oxidized at high temperature.

US 6,331,363 B1

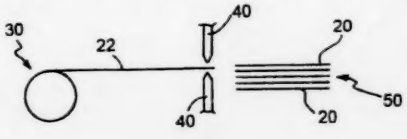
BULK AMORPHOUS METAL MAGNETIC COMPONENTS

Nicholas John DeCristofaro, Chatham, and Peter Joseph Stamatis, Morristown, both of N.J., assignors to Honeywell International Inc., Morris Township, N.J.

Filed Nov. 6, 1998, Appl. No. 186,914

Int. Cl. G11B *5/66*

U.S. Cl. 428—692 **31 Claims**



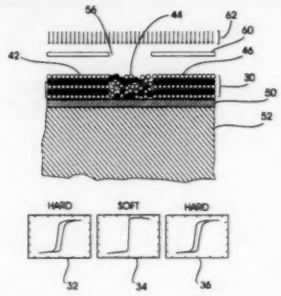
1. A bulk amorphous metal magnetic component comprising a plurality of substantially similar shaped layers of ferromagnetic amorphous metal strips laminated together by impregnating the component with an epoxy resin and curing to form a polyhedrally shaped part.

US 6,331,364 B1

PATTERNED MAGNETIC RECORDING MEDIA CONTAINING CHEMICALLY-ORDERED FEPT OF COPT

John Edward Eric Baglin, Morgan Hill; Andrew John Kellock; Bruce David Terris, both of Sunnyvale; Dieter Klaus Weller, San Jose, and Liesl Folks, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y., and University of New Orleans Foundations, New Orleans, La.

Filed Jul. 9, 1999, Appl. No. 350,803
Int. Cl. G11B *5/66; 5/70*
U.S. Cl. 428—694 T **12 Claims**



1. A magnetic recording medium comprising:

a substrate;

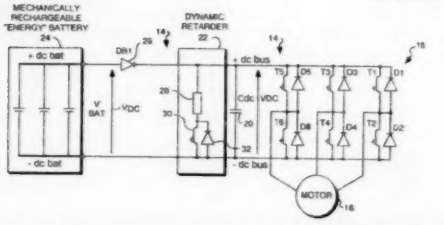
a continuous metal alloy film formed on the substrate and patterned into discrete magnetic regions isolated from one another by regions of the film having substantially no magnetocrystalline anisotropy, the magnetic regions of the film and the substantially no magnetocrystalline anisotropy regions being formed of a material comprising a first element selected from the group consisting of Pt and Pd and a second element selected from the group consisting of Co and Fe, and the magnetic regions of the film comprising a chemically-ordered alloy of said first element and said second element having a chemical order parameter greater than or equal to 70% and a substantially $L1_0$ tetragonal crystalline structure.

US 6,331,365 B1

TRACTION MOTOR DRIVE SYSTEM

Robert Dean King, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 12, 1998, Appl. No. 190,069
Int. Cl. H01M *16/00*
U.S. Cl. 429—9 **22 Claims**



1. A hybrid battery arrangement for an electrically powered system in which battery loading is subject to intermittent high power loading, the system including a hybrid battery coupled to supply electric power via a DC link to a load and a control system for controlling application of power to the load, the hybrid battery arrangement comprising:

a first battery coupled to the DC link;

a second battery coupled to the DC link, the first battery having higher energy and lower power densities than the second battery; and

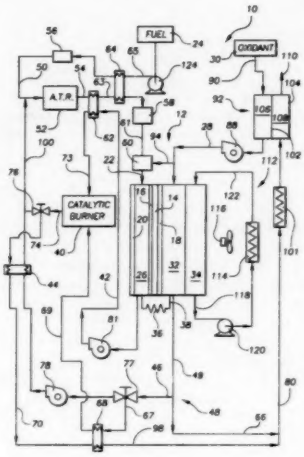
a boost converter, including a unidirectional conductor, coupled in circuit between the first battery and the second battery for selectively boosting the voltage from the first battery to a level sufficient to force current through the unidirectional coupler to the second battery.

US 6,331,366 B1

OPERATING SYSTEM FOR A FUEL CELL POWER PLANT

Leslie L. Van Dine, Manchester, and Albert P. Grasso, Vernon, both of Conn., assignors to International Fuel Cells LLC, South Windsor, Conn.

Filed Jun. 23, 1999, Appl. No. 338,608
Int. Cl. H01M *8/06*
U.S. Cl. 429—17 **24 Claims**



1. An operating system for a fuel cell power plant that generates electrical energy from a reducing fluid and an oxidant fluid, the system comprising:

a. at least one fuel cell means for producing the electrical energy from the reducing and oxidant fluids;

b. fuel processing component means including a reformer and a burner for processing a hydrocarbon fuel into the reducing fluid;

c. a direct mass and heat transfer device means secured in fluid communication with both a primary oxidant passage that directs the oxidant fluid as a process oxidant stream into the fuel cell means and also with a plant exhaust passage that directs a plant exhaust stream out of the plant for directly transferring mass and heat exiting the plant within the plant exhaust stream back into the plant within the process oxidant stream, wherein the direct mass and heat transfer device means includes a transfer medium means for sorbing a fluid substance consisting of polar molecules within the plant exhaust stream and for desorbing the fluid substance consisting of polar molecules into the process oxidant stream, and a separator housing means for supporting the transfer medium means in mass transfer relationship with the plant exhaust stream leaving the plant and process oxidant stream entering the fuel cell so that both streams contact the mass transfer medium means, and for preventing bulk mixing of the Plant exhaust and process oxidant streams; and,

d. a split oxidant passage that directs the process oxidant stream into and through the fuel cell means and directs a reformer feed portion of the process oxidant stream through at least one reformer feed branch of the split oxidant passage to the fuel processing component means, and directs an exhaust portion of the process oxidant stream through an exhaust branch of the split oxidant passage into the plant exhaust passage.

US 6,331,367 B1

ALKALINE STORAGE BATTERY HYDROGEN-ABSORBING ALLOY ELECTRODE AND METHOD FOR PRODUCING THE SAME

Takashi Ebihara; Susumu Kikuyama, both of Kamakura; Akiko Miyahara, Chigasaki; Xianglong Wang, Atsugi, and Kohji Yuasa, Chigasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 21, 1999, Appl. No. 234,300

Claims priority, application Japan, Sep. 11, 1998, 10-276448

Int. Cl. H01M *4/58;* **C01F** *17/00*

U.S. Cl. 429—218.2 **14 Claims**

1 μ

1. A hydrogen-absorbing alloy electrode comprising hydrogen-absorbing alloy powders that comprise at least one rare earth element, nickel and at least one transition metal element, wherein the surface portion of the alloy powders has an exposed nickel-condensed layer and is porous, wherein the content of the pores having a pore diameter of 1.5–2.0 nm in the surface portion of the alloy powders is 1.5×10^{-3}–4.0×10^{-3} cc per 1 g of the alloy powders.

US 6,331,368 B2

TEST OBJECT FOR USE IN DETECTING ABERRATIONS OF AN OPTICAL IMAGING SYSTEM

Peter Dirksen, and Casparus A. H. Juffermans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of application No. 09/407,532, filed on Sep. 29, 1999, now Pat. No. 6,248,486. This application Apr. 27, 2001, Appl. No. 844,122.

Claims priority, application European Pat. Off., Nov. 23, 1998, 98203945

Int. Cl. G03F *8/00*

U.S. Cl. 430—5 **7 Claims**

1. A test object which comprises at least one closed single figure having a phase structure, and means for subjecting the image of this figure observed by a scanning detection device to an image analysis in order to ascertain at least one of different types of changes of shape in the image of the single figure, each type of shape change being indicative of a given kind of aberration.

US 6,331,369 B1

EXPOSURE METHODS FOR OVERLAYING ONE MASK PATTERN ON ANOTHER

Masaharu Kawakubo, and Ryoichi Kaneko, both of Kanagawa-ken, Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of application No. 09/236,090, filed on Jan. 25, 1999, which is a continuation of application No. 08/654,419, filed on May 28, 1996, now abandoned. This application Oct. 12, 1999, Appl. No. 415,500.

Claims priority, application Japan, May 29, 1995, 7-130131; Jun. 20, 1995, 7-152856; Aug. 4, 1995, 7-199676; Aug. 9, 1995, 7-203276

Int. Cl. G03F *9/00*

U.S. Cl. 430—22 **26 Claims**

1. An exposure method in which a substrate is exposed with a second pattern by using a second exposure apparatus, the method comprising:

providing the substrate on which a plurality of first shot areas are formed, the plurality of first shot areas being formed on the substrate by exposing the substrate with a first pattern by using a first exposure apparatus before providing the substrate for the second exposure apparatus, the first and second exposure apparatus having respective exposure fields of different sizes,

detecting at least one of a perpendiculary error of rows of the first shot areas and a mean value of rotation angles of the first shot areas;

relatively rotating the second pattern after rotating the second pattern relative to the substrate, or after rotating the substrate relative to the second pattern.

US 6,331,370 B1

SQUEAK AND DELETION RESISTANT IMAGING MEMBER AND SYSTEM

Richard L. Schank; William W. Limburg, and Dale S. Renfer, all of Monroe, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Appl. No. 483,762

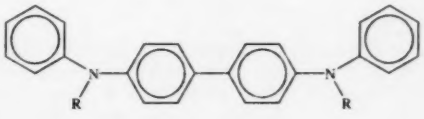
Int. Cl. G03G *5/047*

U.S. Cl. 430—58.3 **4 Claims**

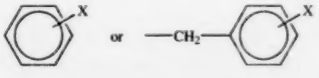
1. An imaging member comprising a charge generation layer and a contiguous charge transport layer, said charge transport layer comprising:

(1) a diamine compound of formula (I):

(I)



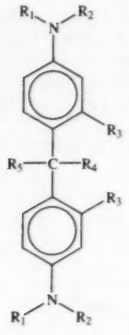
wherein R is



and wherein X is independently selected from the group consisting of alkyl having from 1 to about 4 carbon atoms and chlorine in the ortho, meta or para position; and

(2) a compound of formula (II):

(II)



wherein R_1 and R_2 are independently selected from the group consisting of alkyl having 1 to 8 carbon atoms, aryl, alkaryl and aralkyl, where said aryl is a phenyl group or a condensed ring group, and where the alkyl group of said alkaryl and aralkyl has 1 to 4 carbon atoms;

R_3 and R_4 are independently selected from the group consisting of hydrogen and CH_3; and

R_5 is selected from the group consisting of alkyl having 1 to 8 carbon atoms, aryl, alkaryl, aralkyl, and disubstituted aminophenyl group having substituents independently selected from the group consisting of alkyl having 1 to 8 carbon atoms, aryl, alkaryl and aralkyl, where each said aryl is a phenyl group or a condensed ring group, and each said alkyl group of each said alkaryl and aralkyl has 1 to 4 carbon atoms;

said transport layer being free of halogen containing organic solvent.

US 6,331,371 B1

ELECTROPHOTOGRAPHIC PHOTORECEPTOR AND ITS MANUFACTURING METHOD

Naoyuki Matsui, Niigata, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 19, 1999, Appl. No. 376,003

Claims priority, application Japan, Aug. 19, 1998, 10-247756

Int. Cl. G03G *5/10*

U.S. Cl. 430—65 **13 Claims**

1. An electrophotographic photoreceptor in which a charge generating layer and a charge transporting layer are laminated on a conductive support, said electrophotographic photoreceptor comprising said conductive support which makes a quantity of reflected lights with respect to exposure of a coherent light to be small and is provided with a short wavelength surface roughness in order to suppress a quantity of interference lights produced by said reflected lights from and incident lights on a photoconductive layer formed by said charge generating layer and said charge transporting layer, wherein said conductive support has a conductive support surface whose maximum height (Ry) measured within the reference length of 0.25 mm is greater than or equal to 0.8 μm.

US 6,331,372 B1

TONER PARTICULATES COMPRISING AN ETHYLENE PROPYLENE WAX

Bryan Patrick Livengood, Longmont; James Craig Minor, Niwot; Michael Thomas Moore, Longmont; John Melvin Olson, Boulder; Minerva Piffarerio, Erie, and Vincent Wen-Hwa Ting, Boulder, all of Colo., assignors to Lexmark International, Inc., Lexington, Ky.

Filed Oct. 8, 1999, Appl. No. 416,508

Int. Cl. G03G *9/087; 9/097*

U.S. Cl. 430—108.8 **36 Claims**

1. A toner particulate comprising:

(a) a first resin comprising a cross-linked copolymer comprising styrene monomer and acrylic monomer;

(b) a second resin comprising a non-cross-linked copolymer comprising styrene monomer and acrylic monomer; and

(c) a wax comprising an ethylene propylene copolymer having a molecular weight in the range of from about 500 to about 1000.

US 6,331,373 B1

DEVELOPER FOR ELECTROSTATIC IMAGE

Shigefumi Kuramoto; Yasuhiro Sakai; Hayato Ikeda, all of Osaka, and Nobuyuki Ando, Nara, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka-fu, Japan

Filed Jan. 26, 1996, Appl. No. 592,112

Claims priority, application Japan, Jan. 26, 1995, 7-010992; Jan. 11, 1996, 8-003414; Jan. 11, 1996, 8-003415

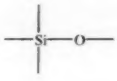
Int. Cl. G03G *9/097*

U.S. Cl. 430—110 **10 Claims**

1. An electrostatic image developer, which comprises:

toner particles comprising (a) a binding resin and (b) a coloring agent and having a mean particle diameter of not more than 25 μm; and

(c) organic-inorganic composite particles which exist in a portion selected from the surface and the proximity of surface of said toner particles, in a state being one of attached and fixed, and wherein said composite particles comprise an organic polymer framework and a polysiloxane framework, wherein said polysiloxane framework comprises a three-dimensional network which is formed by continuous chemical bondage of siloxane units represented by the following formula:



and said polysiloxane framework has in the molecule thereof, an organosilicon moiety which has a silicon atom to which at least one carbon atom in said organic polymer framework is combined directly, wherein said organic polymer framework comprises a main vinyl polymer chain formed of repeating units —C—C—, said organic-inorganic particles having SiO_2 as a component of said polysiloxane framework at a content in the range of 10 to 90% by weight, and said composite particles having a mean particles diameter in the range of 0.01 to 5 μm:

the mixing ratio of (b) said coloring agent to (a) said binding resin in said toner particles being 20 to 2 parts by weight of (b) said coloring agent to 80 to 98 parts by weight of (a) said binding resin, wherein the total amount of (a) and (b) is 100 parts; and

the mixing ratio of said organic-inorganic composite particles to said toner particles being 0.01 to 20 by weight of said organic-inorganic composite particles to 100 parts by weight of said toner particles.

US 6,331,374 B1

IMAGING TRANSFER SYSTEM AND PROCESS FOR TRANSFERRING IMAGE AND NON-IMAGE AREAS THEREOF TO A RECEPTOR ELEMENT

Donald S. Hare, Hawley, Pa., and Scott A. Williams, Rochester, N.Y., assignors to Foto-Wear, Inc., Milford, Pa.

Division of application No. 08/970,424, filed on Nov. 14, 1997, Provisional application No. 60/030,933, filed on Nov. 15, 1996. This application Mar. 31, 2000, Appl. No. 539,711.

Int. Cl. G03C *8/26;11/12*

U.S. Cl. 430—211 13 Claims

1. A developer or receiver sheet which comprises:

a support having a front and rear surface,

a developer material capable of reacting with a color forming substance and which is dispersed in a carrier which is capable of transferring and adhering developed image and non-image areas from said front surface of said support upon the application of heat energy to the rear surface of the support, said carrier strips from said front surface of the support by liquefying and releasing from said support when heated, said liquefied carrier providing adherence to a receptor element by flowing onto said receptor element and solidifying thereon, said adherence does not require an external adhesive layer, with the proviso that the carrier is not capable of reacting to form an image, wherein the carrier is cumulatively present in all layers on said support in an amount from about 15 g/m^2 to about 30 g/m^2, and wherein the carrier is capable of melting, flowing and transferring said image and non-image areas to the receptor at temperatures in the range of from more than 100° C. to about 180° C.

US 6,331,375 B1

PHOTOSENSITIVE LITHOGRAPHIC FORM PLATE USING AN IMAGE-FORMING MATERIAL

Koichi Kawamura, and Hidekazu Oohashi, both of Shizuoka-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Continuation-in-part of application No. 09/259,345, filed on Mar. 1, 1999. This application Mar. 14, 2000, Appl. No. 525,169.

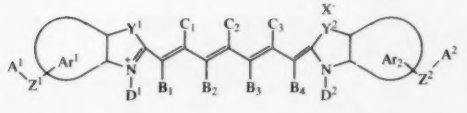
Claims priority, application Japan, Feb. 27, 1998, 10-47713; Mar. 23, 1998, 10-74630; Dec. 25, 1998, 10-371209; Jan. 14, 1999, 11-8488

Int. Cl. G03C *1/00*

U.S. Cl. 430—270.1 10 Claims

1. An infrared light absorbing agent represented by following general formula (1):

General Formula (1)



wherein A^1 and A^2 each independently represents a hydrophobic functional group which changes to hydrophilic due to heat; Ar^1 and Ar^2 each independently represents an aryl group; B^1, B^2, B^3, B^4, C^1, C^2, C^3 each independently represents hydrogen, a halogen, an alkyl group, an aryl group, an alkenyl group or an alkynyl group, and any two of B^1, B^2, B^3, B^4, C^1, C^2, C^3 may form a ring; D^1 and D^2 each independently represents an alkyl group, an aryl group, an alkenyl group, or an alkynyl group; X^- represents a counter anion; and Y^1, Y^2, Z^1, Z^2 each independently represent a divalent binding group formed from nonmental atoms.

US 6,331,376 B1

ORGANIC-SOLVENT-BASED PHOTOCURABLE RESIST COMPOSITION AND RESIST PATTERN-FORMING METHOD

Daisuke Kojima; Genji Imai; Jun Akui; Hideo Kogure, and Osamu Isozaki, all of Kanagawa-ken, Japan, assignors to Kansai Paint Co., Ltd., Hyogo-ken, Japan

PCT No. PCT/JP99/06115, § 371 Date Jul. 5, 2000, § 102(e) Date Jul. 5, 2000, PCT Pub. No. WO00/26724, PCT Pub. Date May 11, 2000

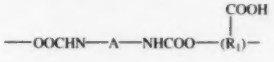
PCT Filed Nov. 2, 1999, Appl. No. 582,846

Claims priority, application Japan, Nov. 4, 1998, 10-312752

Int. Cl. G03F *7/029;7/30*

U.S. Cl. 430—284.1 7 Claims

1. An organic solvent based photocurable resist composition containing a photopolymerizable polyurethane compound having a repeating unit represented by the following formula: B—[X]$_n$[Y]$_m$—B, where X is represented by the formula:



and Y is represented by the formula:

—OOCHN—A—NHCOO—(R_2)—, A is a structural unit derived from a polyisocyanate compound, B is same or different and a structural unit derived from a hydroxy compound having at least one photopolymerizable unsaturated group at molecular terminals respectively, R_1 is a structural unit derived from dimethylol butyric acid, R_2 is a structural unit derived from a polyol compound, n is an integer of 1 to 10, m is an integer of 1 to 10, provided that at least one X and at least one Y are optionally bonded to each other so as to form at least one X-Y bond, said composition being dissolved or dispersed into an organic solvent, in use.

US 6,331,377 B2

METHOD FOR FABRICATING SEMICONDUCTOR DEVICE

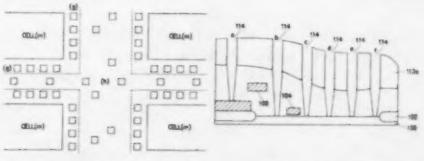
Ki-Soon Bae, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Apr. 28, 1999, Appl. No. 300,895

Claims priority, application Rep. of Korea, Apr. 28, 1998, 98-15070

Int. Cl. G03F *7/00*

U.S. Cl. 430—313 5 Claims



1. A method for forming metal contacts in a dynamic random access memory device having a memory cell region, a core region for driving the cells and a peripheral circuit region comprising the steps of:

forming a transistor having a source/drain on a substrate;

forming a first insulating layer over the transistor;

forming a bit line on the first insulating layer;

forming a second insulating layer over the bit line;

forming a capacitor on the second insulating layer;

forming a third insulating layer to cover the capacitor;

forming a first metal contact on the core region using a first contact pattern having a first opening area; and

forming a second metal contact having an area equal to that of the first metal contact on the peripheral circuit region that has a vertical step difference with the core region, using a second contact pattern having a second opening area that is less than the first opening area.

US 6,331,378 B1

PATTERN FORMING METHOD

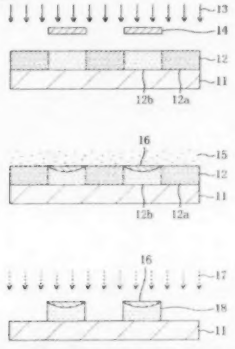
Masayuki Endo, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 16, 1998, Appl. No. 212,412

Claims priority, application Japan, Feb. 25, 1998, 10-043102; Feb. 25, 1998, 10-043107

Int. Cl. G03F *7/00*

U.S. Cl. 430—314 **5 Claims**



1. A pattern forming method comprising the steps of:

coating a substrate with a chemically amplified negative resist to form a resist film thereon, the chemically amplified negative resist including: a polymer containing an acrylic acid as a polymerization unit; an acid generator for generating an acid when irradiated with extreme ultraviolet radiation; and a cross-linking agent for cross-linking the polymer in the presence of an acid;

exposing the resist film to extreme ultraviolet radiation having a wavelength in the band of 13 nm or 5 nm to generate an acid in exposed portions of the resist film;

heating the resist film to generate cross-linkage in the exposed portions of the resist film;

supplying a silylation reagent onto the surface of the resist film to form a silylated layer on the surface of non-exposed portions of the resist film; and

dry-etching the resist film using the silylated layer as a mask, thereby forming a resist pattern out of the non-exposed portions of the resist film.

US 6,331,379 B1

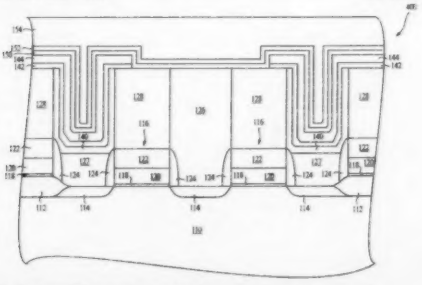
PHOTO-LITHOGRAPHY PROCESS USING MULTIPLE ANTI-REFLECTIVE COATINGS

Philip J. Ireland, Nampa; Thomas R. Glass, Idaho City, and Gurtej Sandhu, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Sep. 1, 1999, Appl. No. 387,775

Int. Cl. G03F *7/00*

U.S. Cl. 430—314 **32 Claims**



1. A photolithography method comprising the steps of:

depositing a first anti-reflective coating over a reflective surface, the first coating having a first index of refraction, a first absorption, an upper surface defining a first interface, and a first thickness;

depositing a second anti-reflective coating at least partially on the upper surface of said first anti-reflective coating, the second anti-reflective coating having a second index of refraction, a second absorption, an upper surface defining a second interface, and a second thickness, wherein the first index of refraction is different from the second index of refraction;

depositing a dielectric material over the second anti-reflective coating; and

depositing a photoresist over the dielectric material.

US 6,331,380 B1

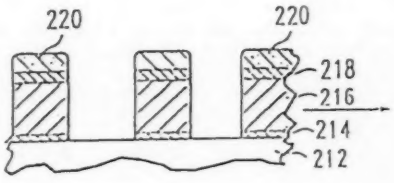
METHOD OF PATTERN ETCHING A LOW K DIELECTRIC LAYER

Yan Ye, Saratoga; Pavel Ionov, Sunnyvale; Allen Zhao, Mountain View; Peter Chang-Lin Hsieh, Sunnyvale; Diana Xiaobing Ma, Saratoga; Chun Yan, Santa Clara, and Jie Yuan, San Jose, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of application No. 09/174,763, filed on Oct. 19, 1998, now Pat. No. 6,080,529, which is a continuation-in-part of application No. 08/991,219, filed on Dec. 12, 1997, now Pat. No. 6,143,476. This application Apr. 14, 2000, Appl. No. 549,262.

Int. Cl. G03C *5/58*

U.S. Cl. 430—318 **44 Claims**



1. A method of pattern etching an organic polymeric layer, comprising the steps of:

(a) providing a layer of an organic polymeric material having on its surface a patterned material which serves as a mask for purposes of pattern transfer, wherein said organic polymeric material is stable at temperatures ranging from about 150° C. to about 500° C.; and

(b) contacting said organic polymeric layer with an etchant plasma which is principally a hydrogen/nitrogen-based plasma, wherein said etchant plasma has an electron density of at least 5×10^{10} e^-/cm^3.

16. A method of pattern etching a low k dielectric layer, comprising the steps of:

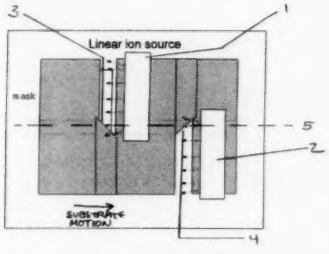
(a) providing a layer of a low k dielectric material having on its surface a patterned material which serves as a mask for purposes of pattern transfer; and

(b) contacting said low k dielectric layer with an etchant plasma which is principally a hydrogen/nitrogen-based plasma, wherein said etchant plasma has an electron density of at least 5×10^{10} e^-/cm^3.

US 6,331,381 B1
METHOD FOR MAKING A LIQUID CRYSTAL ALIGNMENT LAYER

Praveen Chaudhari, Briarcliff Manor; Eileen Ann Galligan, Fishkill; James Patrick Doyle, Bronx; James Andrew Lacey, Mahopac; Shui-Chih Alan Lien, Briarcliff Manor, all of N.Y.; Hiroki Nakano, Shiga, Japan, and Minhua Lu, Mohegan Lake, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 14, 2000, Appl. No. 548,990
Int. Cl. G02F *1/1337*
U.S. Cl. 430—320 **8 Claims**



1. A method of forming an alignment layer for use in a liquid crystal cell comprising the steps of:

providing a substrate having a surface with a border portion;

providing an ion beam source having a ion beam emanating therefrom and disposed at a distance from said surface;

providing a mask layer disposed between said surface and said ion beam source, said mask layer having a first opening and a second opening;

moving said substrate relative to said ion beam source;

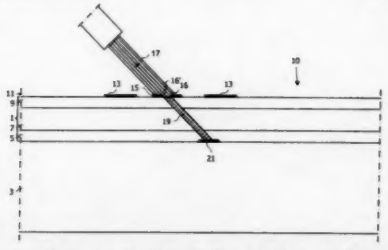
exposing said surface to said ion beam source through said first and second openings; and

wherein said first and second openings are shaped to enhance uniformity of surface exposure in said border portion.

US 6,331,382 B1
METHOD OF FABRICATING MIRRORS IN POLYMER WAVEGUIDES

Mats Robertsson, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson (publ), Stockholm, Sweden

Filed Mar. 5, 1999, Appl. No. 263,522
Claims priority, application Sweden, Mar. 6, 1998, 9800756
Int. Cl. G02B *6/42*
U.S. Cl. 430—321 **6 Claims**



4. A method of connecting a light generating or light receiving electrooptical or optoelectrical device to an optical waveguide formed in a surface layer of a substrate, the method comprising the steps of:

arranging an interior metal layer inside the surface layer in a position below or inside the optical waveguide,

applying a metal layer on the surface,

patterning the metal layer to form an edge of a region, the edge defining a location of a reflecting surface to be formed, and

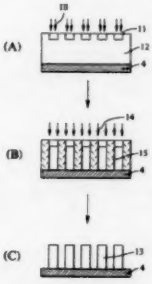
irradiating the surface at the edge using a laser beam to remove material in the surface layer so that a recess is formed having a light reflecting sidewall starting at the edge and extending into the surface layer, so that when irradiating the surface with the laser beam, the beam, after removing material in the optical waveguide, will hit the interior metal layer, such that the material of the interior metal layer will be evaporated, sputtered or atomized and be deposited on the sidewall to form a diffuse reflective surface for propagating light in the recess,

wherein, in the step of patterning the metal layer, the metal layer is further patterned to form metal bonding areas positioning the electrooptical or optoelectrical device in an accurately defined position in relation to the edge defining the location of the reflecting surface to be formed and thus to the light reflecting sidewall.

US 6,331,383 B1
PATTERNING METHOD, AND METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Keita Sakai, Utsunomiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1996, Appl. No. 715,895
Claims priority, application Japan, Sep. 21, 1995, 7-243374
Int. Cl. G03F *7/38;7/023*
U.S. Cl. 430—325 **10 Claims**



1. A method for patterning comprising:

exposing a predetermined portion of a photosensitive composition to a first wavelength of light so as to decrease the transmittance of a different, second wavelength of light at said exposed portion, wherein said first wavelength is a far ultraviolet wavelength and said second wavelength is an i-line wavelength;

exposing an unmasked portion of the photosensitive composition to the second wavelength of light by using the predetermined portion as a mask to change the solubility of the photosensitive composition in a developer; and

developing the photosensitive composition.

US 6,331,384 B1
COLOR FILTER MANUFACTURING APPARATUS

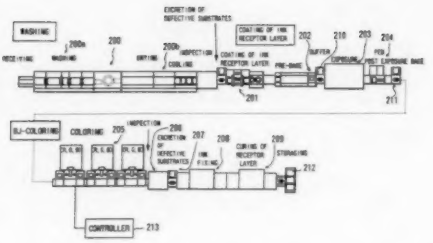
Tsunenobu Satoi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of application No. 08/701,729, filed on Aug. 22, 1996, now Pat. No. 5,989,757. This application Nov. 17, 1999, Appl. No. 441,879.
Claims priority, application Japan, Aug. 25, 1995, 7-217165; Aug. 12, 1996, 8-212555
Int. Cl. G02B *5/20;* **G02F** *1/1335*
U.S. Cl. 430—347 **23 Claims**

1. An apparatus for manufacturing a color filter by coloring a color filter substrate, comprising:

a partitioning unit for partitioning the substrate into portions for which coloring is planned and portion that are not to be colored;

a coloring unit for coloring the portions planned for coloring by discharging ink onto these portions from an inkjet head;



a drying unit for drying by heat the ink discharged by said coloring unit; and

a curing unit for curing by heat the ink discharged by said coloring unit,

wherein said partitioning unit, said coloring unit, said drying unit and said curing unit are arranged in succession as a single manufacturing line, and

wherein a time required for said substrate to proceed from said drying unit to said curing unit is set to a time during which there will be no change in properties of the ink after drying.

US 6,331,385 B1

PHOTOGRAPHIC MATERIAL HAVING ENHANCED LIGHT ABSORPTION

Joseph C. Deaton, Rochester; Richard L. Parton, Webster; Thomas L. Penner, Fairport; William J. Harrison, Rochester, and David E. Fenton, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 11, 1998, Appl. No. 151,977

Int. Cl. G03C *1/29;1/005*

U.S. Cl. 430—572 **39 Claims**

1. A silver halide photographic material comprising at least one silver halide emulsion comprising silver halide tabular grains having associated therewith at least two dye layers comprising

(a) an inner dye layer adjacent to the s niver halide grain and comprising at least one dye that is capable of spectrally sensitizing silver halide and

(b) an outer dye layer adjacent to the inner dye layer and comprising at least one dye which is a cyanine dye, merocyanine dye, aiylidene dye, complex cyanine dye, complex merocyanine dye, homopolar cyanine dye, hemicyanine dye, styril dye, hemioxonol dye, oxonol dye, anthraquinone dye, tiphenylmethane dye, azo dye, azomethine dye, or coumarin dye;

wherein the dye layers are held together by non-covalent forces or by in situ bond formation; the outer dye layer adsorbs light at equal or higher energy than the inner dye layer, and the energy emission wavelength of the outer dye layer overlaps with the energy absorption wavelength of the inner dye layer.

US 6,331,386 B1

PHOTOTHERMOGRAPHIC ELEMENT

Toshihide Ezoe, and Kohzaburoh Yamada, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 28, 1999, Appl. No. 300,837

Claims priority, application Japan, May 11, 1998, 10-145059; Jul. 13, 1998, 10-213487

This patent is subject to a terminal disclaimer.

Int. Cl. G03C *1/498;1/34*

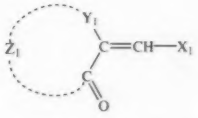
U.S. Cl. 430—619 **7 Claims**

1. A photothermographic element, comprising a non-photosensitive organic silver salt, a photosensitive silver halide formed independent of the non-photosensitive organic silver salt, and a binder on a support, wherein

a polymer latex constitutes at least 50% by weight of the binder in an image forming layer on one surface of said support containing the photosensitive silver halide, the image forming layer has been formed by applying a coating solution in which at least 60% by weight of a solvent is water,

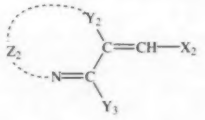
the image forming layer or another layer on the one surface of said support contains at least one compound selected from compounds of the following formulae (A) and (B) and has been formed by applying a coating solution having added thereto a water dispersion of said compound,

formula (A)



wherein Z_1 is a group of non-metallic atoms completing a 5- to 7-membered cyclic structure, Y_1 is —C(=O)— or —SO2—, X_1 is —O.(1/k)M or —S.(1/k)M, M is a cation, and k is the valence of M,

formula (B)



wherein Z_2 is a group of non-metallic atoms completing a 5- to 7-membered cyclic structure, Y_2 is —C(=O)— or —S_2—, X_2 is —O.(1/k)M or —S.(1/k)M, M is a cation, k is the valence of M, and Y_3 is hydrogen or an optionally substituted substituent selected from the group consisting of alkyl, aryl, heterocyclic, cyano, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, amino, alkylamino, arylamino, heterocyclicamino, acylamino, sulfonamide, ureido, thioureido, imide, alkoxy, aryloxy, alkylthio, arylthio and heterocyclicthio.

US 6,331,387 B2

ADSORBING PATHOGEN-INACTIVATING COMPOUNDS WITH POROUS PARTICLES IMMOBILIZED IN A MATRIX

Derek J. Hei, Concord, Calif., assignor to Cerus Corporation, Concord, Calif.

Continuation-in-part of application No. 09/003,113, filed on Jan. 6, 1998, now abandoned. This application Jul. 8, 1998, Appl. No. 112,400.

Int. Cl. A01N *1/02;* **C12M** *11/08;7/06;1/00;* **C07K** *17/08*

U.S. Cl. 435—2 **53 Claims**

1. A pathogen-inactivating compound adsorption system for reducing the concentration of a low molecular weight pathogen-inactivating compound in an aqueous biological composition containing cellular elements, wherein the pathogen-inactivating compound adsorption system comprises a housing compatible with the biological composition containing an adsorption medium comprising porous adsorbent particles immobilized by a matrix, wherein the diameter of the adsorbent particles ranges from about 100 μm to about 1500 μm, wherein the adsorbent particles have an affinity for said pathogen-inactivating compound, wherein the system is configured to remove said pathogen-inactivating compound from said biological composition in a batch process, and wherein the system is configured so that the cellular elements in the biological composition treated with the system maintain sufficient biological

activity so that said biological composition is suitable for infusion within a human.

US 6,331,388 B1

IMMUNE RESPONSE ENHANCER

Miroslav Malkovsky, Madison, Wis., and Andrew D. Wells, Mt. Laurel, N.J., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 17, 1997, Appl. No. 955,565

Int. Cl. A61K *31/7088;* **C12N** *5/00;* **G01N** *33/569*

U.S. Cl. 435—5 **14 Claims**

1. A method of specifically increasing expression of an MHC class I molecule in an isolated target cell, comprising:

a) providing:

i) said isolated target cell, wherein said cell is infected with a pathogen that is processed by the MHC class I endogenous pathway; and

ii) an expression vector encoding a heat shock protein; and

b) introducing said expression vector into said target cell under conditions such that said heat shock protein is expressed and a transfected cell is produced having increased expression of at least one MHC class I molecule.

US 6,331,389 B1

METHOD FOR DETECTION OF DRUG-INDUCED MUTATIONS IN THE REVERSE TRANSCRIPTASE GENE

Stuyver Lieven, Herzele; Louwagie Joost, Zwijndrecht, and Rossau Rudi, Ekeren, all of Belgium, assignors to Innogenetics N.V., Ghent, Belgium

Division of application No. 08/913,833, filed as application No. PCT/EP97/00211, filed on Jan. 17, 1997, now Pat. No. 6,087,093. This application May 30, 2000, Appl. No. 580,794.

Claims priority, application European Pat. Off., Jan. 26, 1996, 96870005; Jun. 25, 1996, 96870081

This patent is subject to a terminal disclaimer.

Int. Cl. C12Q *1/70;* **C07H** *21/04*

U.S. Cl. 435—5 **10 Claims**

1. Method for determining the susceptibility to antiviral drugs of viruses which contain reverse transcriptase genes and are present in a biological sample, comprising:

(i) hybridizing polynucleic acids present in the sample with at least two reverse transcriptase (RT) gene probes, with said probes being applied to known locations on a solid support and with said probes being capable of simultaneously hybridizing to their respective target regions under appropriate hybridization and wash conditions allowing the detection of homologous targets, or with said probes hybridizing specifically with a sequence complementary to any of said target sequences, or a sequence wherein T of said target sequence is replaced by U;

(ii) detecting the hybrids formed in step (i); and

(iii) inferring the nucleotide sequence at the codons of interest as represented in any of FIG. **1**, or Table 4 and/or the amino acids of the codons of interest and/or antiviral drug resistance spectrum from the differential hybridization signal(s) obtained in step (ii);

wherein said viruses are HIV strains, and wherein said RT gene probes are each selected from the group consisting of SEQ ID NO: 4, 8, 9, 10, 11, 12, 13, 14, 15, 19, 21, 22, 24, 25, 27, 28, 30, 31, 32, 33, 34, 35, 40, 46, 48, 49, 50, 51, 52, 57, 58, 70, 72, 73, 75, 76, 78, 79, 80, 81, 82, 83, 86, 88, 90, 93, 95, 96, 97, 98, 99, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 115, 117, 118, 119, 120, 121, 122, 124, 125, 126, 127, 128, 130, 131, 132, 133, 134, 135, 136, 138, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 154, 155, 157, and 159.

US 6,331,390 B1

CELL-CYCLE REGULATORY PROTEINS, AND USES RELATED THERETO

David H. Beach, Huntington Bay, N.Y.; Douglas J. Demetrick, Alta, Canada; Manuel Serrano, Mill Neck, and Gregory J. Hannon, Huntington, both of N.Y., assignors to Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y.

Continuation-in-part of application No. 08/346,174, filed on Nov. 29, 1994, which is a continuation-in-part of application No. 08/306,511, filed on Sep. 14, 1994, which is a continuation-in-part of application No. 08/248,812, filed on May 25, 1994, now Pat. No. 5,889,169, which is a continuation-in-part of application No. 08/227,371, filed on Apr. 14, 1994, which is a continuation-in-part of application No. 08/154,915, filed on Nov. 18, 1993, which is a continuation-in-part of application No. 07/991,997, filed on Dec. 17, 1992, now abandoned. This application Jun. 30, 1995, Appl. No. 497,214.

This patent is subject to a terminal disclaimer.

Int. Cl. C12Q *1/68*

U.S. Cl. 435—6 **19 Claims**

1. A diagnostic assay for identifying a cell or cells at risk for a disorder characterized by unwanted cell proliferation or differentiation, comprising detecting, in a cell sample, the presence or absence of a genetic lesion characterized by at least one of (i) aberrant modification or mutation of a gene encoding a [CDK-inhibitoryl p16 protein, and (ii) mis-expression of said gene; wherein a wild-type form of said gene encodes a p16 protein characterized by an ability to bind to a cyclin dependent kinase and an amino acid sequence comprising a series of ankyrin-like repeats.

US 6,331,391 B1

YEAST CELL SURFACE DISPLAY OF PROTEINS AND USES THEREOF

K. Dane Wittrup, Urbana; David M. Kranz, Champaign; Michele Kieke, Urbana, all of Ill., and Eric T. Boder, Media, Pa., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Continuation-in-part of application No. 08/866,398, filed on May 30, 1997, now abandoned, Provisional application No. 60/018,741, filed on May 31, 1996, now abandoned. This application Jan. 20, 1998, Appl. No. 9,388.

This patent is subject to a terminal disclaimer.

Int. Cl. C12Q *1/68;* **C12N** *15/81;1/15*

U.S. Cl. 435—6 **42 Claims**

1. A method for selecting proteins for displayability on a yeast cell surface, comprising:

transforming yeast cells with a vector which expresses a protein to be tested fused to a yeast cell wall protein, wherein mutagenesis is used to generate a variegated population of mutants of the protein to be tested;

contacting said yeast cells with a label which binds to proteins that are displayed on the yeast cell surface and does not bind to proteins that are not displayed on the yeast cell surface;

isolating said yeast cells with which said label is bound, wherein the presence of said label bound to a protein to be tested

indicates said protein to be tested is displayable on the yeast cell surface.

US 6,331,392 B1

SCREEN EMPLOYING FLUORESCENCE ANISOTROPY TO IDENTIFY COMPOUNDS WITH AFFINITY FOR NUCLEIC ACIDS

Lance G. Laing, Belmont; Jaime E. Arenas, Lexington; Sharon T. Cload, Cambridge; James W. Lillie, Natick, and Andrew A. Pakula, Lexington, all of Mass., assignors to Anadys Pharmaceutical, Inc., Waltham, Mass.

Provisional application No. 60/039,911, filed on Mar. 5, 1997. This application Mar. 5, 1998, Appl. No. 60,449.

Int. Cl. C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **9 Claims**

1. A method for identifying ligands that bind a predetermined target RNA sequence, which comprises:

(a) identifying a library comprising test ligands not known to bind to a predetermined target RNA sequence;

(b) selecting a subset of test ligands in the library;

(c) incubating the target RNA with a fluorescently labeled probe in the presence of at least one selected test ligand to produce a test combination;

(d) incubating the target RNA with said probe in the absence of each test ligand to produce a corresponding control combination;

(e) measuring a fluorescence property of said probe;

(f) selecting as a ligand any test ligand that causes a measurable change in a fluorescence property measured in step (e) in the test combination relative to the control combination, wherein said change in fluorescence property reflects the stability and/or conformation of said target RNA; and

(g) repeating steps (b)–(e) in a high throughput screen.

US 6,331,393 B1

PROCESS FOR HIGH-THROUGHPUT DNA METHYLATION ANALYSIS

Peter W. Laird; Cindy A. Eads, both of South Pasadena, and Kathleen D. Danenberg, Altadena, all of Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed May 14, 1999, Appl. No. 311,912

Int. Cl. C12Q *1/68*

U.S. Cl. 435—6 **26 Claims**

1. A method for detecting cytosine methylation and methylated CpG islands within a genomic sample of DNA comprising:

(a) contacting a genomic sample of DNA with a modifying agent that modifies unmethylated cytosine to produce a converted nucleic acid;

(b) amplifying the converted nucleic acid by means of oligonucleotide primers in the presence of one or a plurality of specific oligonucleotide probes, wherein one or a plurality of the oligonucleotide primers or the specific probe(s) are capable of distinguishing between unmethylated and methylated nucleic acid, with the proviso that at least one oligonucleotide probe is a CpG-specific probe capable of distinguishing between unmethylated and methylated nucleic acid; and

(c) detecting the methylated nucleic acid based on amplification-mediated displacement of the CpG-specific probe.

US 6,331,394 B1

NUCLEIC ACID LIGANDS TO INTEGRINS

Judy Ruckman; Larry Gold; Andrew Stephens, and Nebojsa Janjic, all of Boulder, Colo., assignors to Gilead Sciences, Inc., Foster City, Calif.

Continuation-in-part of application No. 09/606,477, filed on Jun. 29, 2000, which is a continuation of application No. 08/956,699, filed on Oct. 23, 1997, now Pat. No. 6,083,696, which is a continuation of application No. 08/234,997, filed on Apr. 28, 1994, now Pat. No. 5,683,867, which is a continuation-in-part of application No. 07/714,131, filed on Jun. 10, 1991, now Pat. No. 5,475,096. This application Jul. 29, 1999, Appl. No. 364,543.

This patent is subject to a terminal disclaimer.

Int. Cl. C12Q *1/68;* **C12P** *19/34;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **19 Claims**

1. A nucleic acid ligand to an integrin identified according to the method comprising:

a) preparing a candidate mixture of nucleic acids;

b) contacting the candidate mixture of nucleic acids with said integrin, wherein nucleic acids having an increased affinity to said integrin relative to the candidate mixture may be partitioned from the remainder of the candidate mixture;

c) partitioning the increased affinity nucleic acids from the remainder of the candidate mixture;

d) amplifying the increased affinity nucleic acids to yield a mixture of nucleic acids enriched for nucleic acids with relatively higher affinity and specificity for binding to said integrin, whereby a nucleic acid ligand of said integrin may be identified.

US 6,331,395 B1

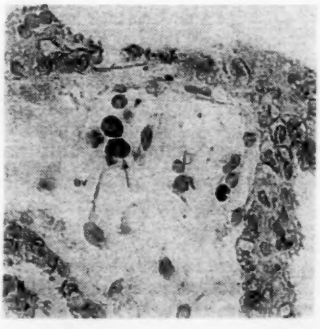
PRENATAL DIAGNOSTIC METHODS

Ann Burchell, Tayport, and Robert Hume, Dundee, both of United Kingdom, assignors to The University of Dundee, United Kingdom

Continuation of application No. PCT/GB98/00656, filed on Mar. 3, 1998, Provisional application No. 60/067,520, filed on Dec. 4, 1997. This application Sep. 8, 1999, Appl. No. 392,055. Claims priority, application United Kingdom, Mar. 8, 1997, 9704876

Int. Cl. G01N *33/573;33/68;33/569;33/80*

U.S. Cl. 435—6 **1 Claim**



1. A method of isolating embryonic or fetal red blood cells from a sample containing maternal red blood cells and embryonic or fetal red blood cells, the method comprising isolating the cells that contain or express glucose transporter 2 (GLUT2), the method comprising the steps of:

(a) contacting the sample with an anti-GLUT2 antibody that specifically binds the glucose transporter 2;

(b) allowing the anti-GLUT2 antibody to bind to the glucose transporter 2; and

(c) isolating the embryonic or fetal red blood cells by virtue of being bound to the anti-GLUT2 antibody.

US 6,331,396 B1

ARRAYS FOR IDENTIFYING AGENTS WHICH MIMIC OR INHIBIT THE ACTIVITY OF INTERFERONS

Robert H. Silverman, Beachwood; Bryan R. G. Williams, and Sandy Der, both of Cleveland, all of Ohio, assignors to The Cleveland Clinic Foundation, Cleveland, Ohio

Provisional application No. 60/101,497, filed on Sep. 23, 1998. This application Sep. 23, 1999, Appl. No. 405,438.

Int. Cl. C12Q *1/68;* **C12M** *1/36;* **C07H** *21/04*

U.S. Cl. 435—6 **8 Claims**

1. An array for identifying agents which mimic or inhibit the activity of interferons comprising:

a) gene probes that hybridize with from about 50 to about 10,000 interferon-stimulated and interferon-repressed gene transcripts, and

b) a substrate to which said gene probes are attached;

wherein the array comprises gene probes that hybridize to transcripts of no more than 99 genes whose expression is known not to be stimulated or repressed by interferon treatment, and

wherein the array comprises a probe that hybridizes with the transcript of human phospholipid scramblase.

US 6,331,397 B1

METHOD FOR PRODUCING LONG DNA CONSTRUCTS IN AGAROSE

Dirk Schindelhauer, Clemensstr. 111, 80796 München, Germany, and Howard Cooke, 8 Stirling Road, Edinburgh EH5 3HY, United Kingdom

PCT No. PCT/DE98/01421, § 371 Date May 11, 2000, § 102(e) Date May 11, 2000, PCT Pub. No. WO98/53056, PCT Pub. Date Nov. 26, 1998

PCT Filed May 18, 1998, Appl. No. 423,984

Claims priority, application Germany, May 17, 1997, 197 20 839

Int. Cl. C12P *19/34;* **C12N** *15/64;15/10;* **C07H** *21/04;* **C12Q** *1/68*

U.S. Cl. 435—6 **15 Claims**

14. A method for producing a DNA construct, the method comprising:

(a) providing a recombinase;

(b) providing DNAs for recombination, each DNA comprising a sequence specific for the recombinase;

(c) providing an agarose at a temperature which maintains the agarose in a sufficiently liquid state to permit sufficiently homogeneous mixing of the DNAs and the recombinase to permit recombination of the DNAs to form the DNA construct;

(d) combining the recombinase and the DNAs in the agarose for a time and under conditions sufficient to effect recombination of the DNAs to form the DNA construct;

(e) obtaining the DNA construct by:

(i) adding to the gel restriction enzymes which cleave DNA other than the DNA construct to yield DNA fragments;

(ii) solidifying the gel to from a solidified gel comprising the DNA construct and the DNA fragments;

(iii) in the solidified gel, separating the DNA fragments from the DNA construct by gel electrophoresis; and

(iv) obtaining the DNA construct from the gel.

US 6,331,398 B1

NUCLEIC ACID LIGANDS

Larry Gold, Boulder, Colo., and Craig Tuerk, Morehead, Ky., assignors to Gilead Sciences, Inc., Foster City, Calif.

Continuation of application No. 09/143,190, filed on Aug. 27, 1998, now Pat. No. 6,111,099, which is a continuation of application No. 08/469,609, filed on Jun. 6, 1995, now Pat. No. 5,843,653, which is a continuation of application No. 08/428,964, filed on Apr. 25, 1995, now abandoned, said application No. 08/469,609 is a continuation of application No. 08/409,442, filed on Mar. 24, 1995, now Pat. No. 5,696,249, said application No. 08/469,609 is a continuation of application No. 08/412,110, filed on Mar. 27, 1995, now Pat. No. 5,670,637, said application No. 08/428,964, said application No. 08/409,442, said application No. 08/412,110 is a continuation of application No. 07/714,131, filed on Jun. 10, 1991, now Pat. No. 5,475,096, which is a continuation-in-part of application No. 07/536,428, filed on Jun. 11, 1990, now abandoned. This application Feb. 10, 2000, Appl. No. 502,344.

This patent is subject to a terminal disclaimer.

Int. Cl. C07H *21/04;21/02;* **C12Q** *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **15 Claims**

1. A method of identifying a function-modifying nucleic acid ligand that modifies a function of a target molecule comprising:

(a) identifying a nucleic acid ligand to the target molecule;

(b) contacting said identified nucleic acid ligand with the target molecule; and

(c) evaluating whether said identified nucleic acid ligand modifies a function of the target molecule, whereby said function-modifying nucleic acid ligand may be identified.

US 6,331,399 B1

ANTISENSE INHIBITION OF TERT EXPRESSION

Brett P. Monia, La Costa; William A. Gaarde, Carlsbad, and Edward Wancewicz, Poway, all of Calif., assignors to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Filed May 16, 2000, Appl. No. 572,423

Int. Cl. C07H *21/04;* **C12Q** *1/68;* **C12N** *5/02*

U.S. Cl. 435—6 **32 Claims**

1. A compound 8 to 50 nucleobases in length targeted to a nucleic acid molecule encoding TERT, wherein the compound has a sequence comprising at least an 8-nucleobase portion of SEQ ID NO: 16, 20, 23, 24, 25, or 26 and wherein said compound specifically hybridizes with and inhibits the expression of TERT.

US 6,331,400 B1

METHOD FOR CHARACTERIZATION OF THE FINE STRUCTURE OF PROTEIN BINDING SITES

Virgil L. Woods, Jr., San Diego, Calif., assignor to Carta Proteomics, Inc., San Mateo, Calif.

Continuation of application No. 08/240,593, filed on May 10, 1994, now Pat. No. 5,658,739. This application Jul. 16, 1997, Appl. No. 895,330.

This patent is subject to a terminal disclaimer.

Int. Cl. G01N *33/53;30/02;30/72;* **C12Q** *1/37*

U.S. Cl. 435—7.1 **18 Claims**

1. A method of identifying the position of a peptide amide within a sequence of a binding protein, said method comprising the steps of:

(a) on-exchanging heavy hydrogen onto the binding protein for a period of time sufficient to label solvent-accessible peptide amides with said heavy hydrogen, to produce a first heavy hydrogen labeled binding protein and a second heavy hydrogen labeled binding protein;

(b) off-exchanging solvent-accessible heavy hydrogen from said first heavy hydrogen labeled binding protein to produce a control and, under a same set of conditions, off-exchanging solvent-accessible heavy hydrogen from a complex between a binding partner and said second heavy hydrogen labeled bind-

ing protein, thereby producing, a functionally labeled binding protein that has at least one labeled peptide amide having a hydrogen exchange rate that is slowed in said complex compared to said exchange rate in said first heavy hydrogen labeled binding protein;

(c) progressively degrading said control and said functionally labeled binding protein to obtain a series of sub-fragments for said control and a series of sub-fragments for said functionally labeled binding protein, wherein each sub-fragment is shorter than the corresponding preceding sub-fragment in each of said series by a single amino acid residue; and

(d) determining which of said sub-fragments from said functionally labeled binding, protein are labeled with heavy hydrogen in comparison to said control, thereby identifying the position of each of said labeled peptide amides within the sequence of said binding protein

wherein steps (c) and (d) are carried out under conditions of slowed hydrogen exchange.

US 6,331,401 B1

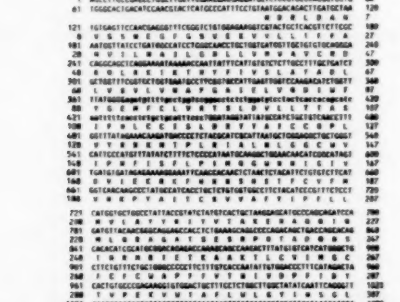
USES OF THE 5-HT$_4$ RECEPTOR

Christophe Gerald, Ridgewood; Paul R. Hartig, Pennington; Theresa Branchek, Teaneck, all of N.J., and Richard L. Weinshank, New York, N.Y., assignors to Synaptic Pharmaceutical Corporation, Paramus, N.J.

Division of application No. 08/446,822, filed as application No. PCT/US93/12586, filed on Dec. 22, 1993, now Pat. No. 5,766,879, which is a continuation-in-part of application No. 07/996,772, filed on Dec. 24, 1992, now Pat. No. 5,472,866. This application Apr. 3, 1998, Appl. No. 328,314.

Int. Cl. G01N *33/53;33/567*

U.S. Cl. 435—7.1 **11 Claims**



1. A process for identifying a chemical compound which specifically blinds to a rat 5-HT$_4$ receptor, which comprises contacting (a) nonneuronal cells having on their cell surface the rat 5-HT$_4$ receptor or (b) a membrane fraction from such cells, wherein the rat 5-HT$_4$ receptor has the amino acid sequence shown in FIGS. **1-1** to **1-2** (SEQ ID NO: 2) or FIG. **2** (SEQ ID NO: 4), with the chemical compound under conditions suitable for binding, and detecting specific binding of the chemical compound to the rat 5-HT$_4$ receptor.

US 6,331,402 B1

REDUCTION OF INTERFERENCE OF IMMUNOASSAYS BY SUBSTANCES DERIVED FROM THE FRAMEWORK REGIONS OF ANTIBODIES

Sabine Nussbaum, Iffeldorf; Ellen Moessner, Buehlerzell; Helmut Lenz, Tutzing, and Gerald Praast, Schlangenbad, all of Germany, assignors to Roche Diagnostics GmbH, Germany

Filed Jun. 25, 1999, Appl. No. 344,587

Claims priority, application Germany, Jun. 26, 1998, 198 28 466

Int. Cl. C12Q *1/00;* **G01N** *33/53;33/567;33/574;33/537*

U.S. Cl. 435—7.1 **6 Claims**

1. A method for the detection of an analyte in a biological sample suspected of containing said analyte and an interfering substance, said method comprising the steps of:

a. forming a test mixture comprising

i) said sample,

ii) a binding partner specific for said analyte, and

iii) an interference reducing substance in a concentration of at least about 10 μg/ml of the test mixture, said substance comprising a peptide sequence derived from framework region 1 or 3 of the variable domain of an antibody selected from the group consisting of said binding partner and antibodies used for immunological therapy or scintigraphy, wherein said interference reducing substance is not mouse serum and wherein said test mixture allows for binding of said analyte to said binding partner, and

b. detecting said analyte present in said sample by measuring the binding between said analyte and said binding partner.

US 6,331,403 B1

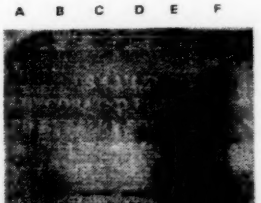
USE OF MCRP TO SLOW CELL GROWTH AND TO PROMOTE MATURATION OF CELLS

Lawrence A. Potempa, 1630 Montgomery Rd., Deerfield, Ill. 60015, and James A. Radosevich, 7135 Sentinel Rd., Rockford, Ill. 61107

Provisional application No. 60/097,280, filed on Aug. 19, 1998. This application Aug. 18, 1999, Appl. No. 376,398.

Int. Cl. G01N *33/53;* **A61K** *39/00;45/00;* **A01N** *37/18*

U.S. Cl. 435—7.1 **8 Claims**



1. A method of promoting maturation of immature cells other than cancer cells and megakaryocyte progenitors in vitro comprising contacting the immature cells in vitro with a modified C-reactive protein (mCRP) or a mutant-mCRP.

US 6,331,404 B1

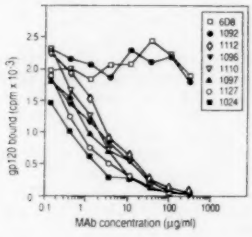
HIV ENVELOPE POLYPEPTIDES

Phillip W. Berman, Portola Valley, and Gerald R. Nakamura, San Francisco, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of application No. 09/134,075, filed on Aug. 13, 1998, now Pat. No. 6,042,836, which is a division of application No. 08/448,603, filed as application No. PCT/US94/06036, filed on Jun. 7, 1994, now Pat. No. 5,864,027, which is a continuation-in-part of application No. 08/072,833, filed on Jun. 7, 1993, now abandoned. This application Jan. 27, 2000, Appl. No. 492,739.

Int. Cl. G01N *33/53;* **A61K** *39/21*

U.S. Cl. 435—7.1 **20 Claims**



1. A method for making an immunogenic composition, said method comprising:

a. determining a neutralizing epitope in the V2 or C4 domain of gp120 of HIV isolates from a geographic region;

b. selecting an HIV isolate wherein said neutralizing epitope in the V2 or C4 domain is present in at least about 5 percent of isolates in the geographic region; and

c. making an immunogenic composition comprising said neutralizing epitope.

US 6,331,405 B1

RECEPTOR FOR *MYCOBACTERIUM LEPRAE* AND METHODS OF USE THEREOF

Anura Rambukkana, New York; Vincent A. Fischetti, West Hempstead, both of N.Y., and Kevin P. Campbell, Iowa City, Iowa, assignors to The Rockefeller University, New York, N.Y.

Filed Dec. 10, 1998, Appl. No. 209,108

Int. Cl. G01N *33/53;* **C12N** *1/20;* **C12Q** *1/02*

U.S. Cl. 435—7.2 **8 Claims**

1. A method for identifying compounds that inhibit laminin-α2G mediated binding of *Mycobacterium leprae* to an isolated α-dystroglycan polypeptide, which method comprises

incubating *Mycobacterium leprae*, the α-dystroglycan polypeptide and a molecule comprising a laminin-α2G domain with a compound suspected of having inhibitory activity under conditions that allow for laminin-α2G mediated binding of *Mycobacterium leprae* to the isolated α-dystroglycan polypeptide; and

determining the presence or absence of a laminin-α2G/*Mycobacterium leprae* complex bound to the isolated α-dystroglycan polypeptide;

wherein the absence of the laminin-α2G/*Mycobacterium leprae* complex bound to the isolated α-dystroglycan polypeptide is indicative of a compound that inhibits said binding.

US 6,331,406 B1

HUMAN ENBRYONIC GERM CELL AND METHODS OF USE

John D. Gearhart, and Michael Joseph Shamblott, both of Baltimore, Md., assignors to The John Hopkins University School of Medicine, Baltimore, Md.

Continuation-in-part of application No. 08/829,372, filed on Mar. 31, 1997. This application Dec. 12, 1997, Appl. No. 989,744.

Int. Cl. G01N *33/567;* **C12N** *5/08;5/00*

U.S. Cl. 435—7.21 **16 Claims**

1. An in vivo method for determining the effect of a compound on a human pluripotent embryonic germ (hEG) cell function comprising:

a) incubating the compound and at least one hEG cell under conditions sufficient to allow the compound and the cell to interact, wherein the hEG cell is dependent on a growth factor and a factor which binds to a receptor which can heterodimerize with gp 130 during maintenance; and

b) determining whether the compound has an effect on cell function compared to hEG cells not treated with the compound.

US 6,331,407 B1

ANTIBIOTICS AND METHODS OF USING THE SAME

Rodger Novak, Memphis, and Elaine I. Tuomanen, Germantown, both of Tenn., assignors to St. Jude Children's Research Hospital, Memphis, Tenn.

Provisional application No. 60/084,399, filed on May 6, 1998. This application May 5, 1999, Appl. No. 305,984.

Int. Cl. G01N *33/569*

U.S. Cl. 435—7.34 **8 Claims**

1. A method of identifying an agent that is capable of inhibiting the growth of or killing a bacterial cell comprising:

(a) contacting the agent with a bacterial cell, wherein the bacterial cell has been selected to have a defective His-Asp phosphorelay pathway; and

(b) determining whether the cell is killed or its growth is inhibited; wherein an agent is identified as capable of killing or inhibiting the growth of a bacterial cell if it kills or inhibits the growth of the bacterial cell.

US 6,331,408 B1

USE OF SMALL MOLECULE RADIOLIGANDS TO DISCOVER INHIBITORS OF AMYLOID-BETA PEPTIDE PRODUCTION

Robert Zaczek, 18 Roosevelt Way, Avondale, Pa. 19311; Richard E. Olson, 7 Pelham Rd., Wilmington, Del. 19803; Dietmar A. Seiffert, 3719 Highland Dr., Boothwyn, Pa. 19061, and Lorin Andrew Thompson, 600 Silverside Rd., Wilmington, Del. 19809

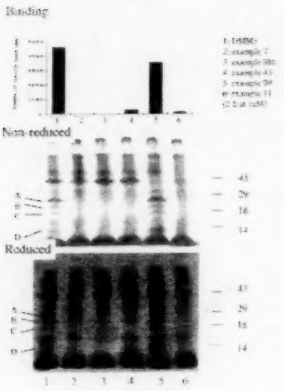
Provisional application No. 60/131,284, filed on Apr. 27, 1999, Provisional application No. 60/108,147, filed on Nov. 12, 1998. This application Nov. 12, 1999, Appl. No. 438,901.

Int. Cl. C12Q *1/37;1/00;* **G01N** *33/53*

U.S. Cl. 435—23 **58 Claims**

1. A method of screening for inhibitors of beta-amyloid production in a sample or host comprising,

1) contacting a potential inhibitor of beta-amyloid production and a tagged inhibitor of beta-amyloid production with at least one macromolecule involved in the processing of APP



and the production of beta-amyloid peptide, said macromolecule containing a binding site specific for said tagged inhibitor of beta-amyloid production;

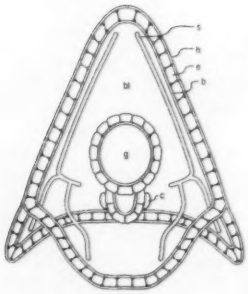
2) separating the tagged inhibitor of beta-amyloid production bound to said macromolecule from the tagged inhibitor of beta-amyloid production free from said macromolecule; and

3) determining an inhibitory concentration of the potential inhibitor of beta-amyloid production from the concentration of tagged inhibitor of beta-amyloid production bound to said macromolecule.

US 6,331,409 B1
METHODS AND COMPOSITIONS FOR WOUND HEALING

Donna L. Livant, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation-in-part of application No. 08/754,322, filed on Nov. 21, 1996, now Pat. No. 5,840,514. This application Feb. 14, 2000, Appl. No. 503,998.
This patent is subject to a terminal disclaimer.
Int. Cl. C12Q *1/02;1/37;1/00*
U.S. Cl. 435—29 **24 Claims**



1. A method for treating a wound, comprising:

a) providing: i) an invasion-inducing agent, and ii) muscle cells, and iii) a substrate; and

b) treating said muscle cells with said invasion-inducing agent under conditions such that said muscle cells invade said substrate.

US 6,331,410 B1
POLYNUCLEOTIDES ENCODING A NOVEL PYRR HOMOLOG

Martin Karl Russel Burnham, Norristown; Michael Arthur Lonetto, Collegeville, and Patrick Vernon Warren, Philadelphia, all of Pa., assignors to SmithKline Beecham Corp., Philadelphia, Pa.

Filed Aug. 29, 1997, Appl. No. 920,803
Int. Cl. C12N *15/31;1/21;15/63*
U.S. Cl. 435—69.1 **12 Claims**

1. An isolated polynucleotide segment comprising a first polynucleotide sequence, wherein the first polynucleotide sequence encodes a polypeptide comprising the amino acid sequence set forth in SEQ ID NO:2.

US 6,331,411 B1
TOPA

Michael Gwynn, Chester Springs; Howard Kallender, King of Prussia; Lisa K Katz, Newtown; Daniel Sylvester, Collegeville; Christopher M Traini, Media, and Richard Lloyd Warren, Blue Bell, all of Pa., assignors to SMithKline Beecham Corporation, Philadelphia, Pa.

Continuation-in-part of application No. 08/949,637, filed on Oct. 14, 1997, now Pat. No. 5,910,414. This application Sep. 15, 1998, Appl. No. 153,277.
Int. Cl. C12N *5/10;15/31;* **C12Q** *1/68;* **C07H** *21/00*
U.S. Cl. 435—69.1 **33 Claims**

1. An isolated polynucleotide segment comprising a nucleic acid sequence or the full complement of the entire length of the nucleic acid sequence, wherein the nucleic acid sequence is identical to SEQ ID NO:1, except that, over the entire length corresponding to SEQ ID NO:1, n_n nucleotides are substituted, inserted or deleted, wherein n_n satisfies the following expression

$$n_n \leqq x_n - (x_n \cdot y)$$

wherein x_n is the total number of nucleotides in SEQ ID NO:1, y is at least 0.95, and wherein any non-integer product of x_n and y is rounded down to the nearest integer before subtracting the product from x_n; wherein the nucleic acid sequence detects *Streptococcus pneumoniae* by hybridization and wherein the nucleic acid sequence is not genomic DNA.

US 6,331,412 B1
METHODS AND COMPOUNDS FOR MODULATING MALE FERTILITY

Robert G. Korneluk, and Mark Lagacé, both of Ottawa, Canada, assignors to University of Ottawa, Ottawa, Canada

Provisional application No. 60/073,001, filed on Jan. 29, 1998. This application Jan. 29, 1999, Appl. No. 239,867.
Int. Cl. C12P *21/06;* **C12N** *5/00;15/00;* **C07H** *21/02;21/04*
U.S. Cl. 435—69.1 **5 Claims**

1. An isolated nucleic acid molecule encoding a TIAP polypeptide.

US 6,331,413 B1
SECRETED SALIVARY ZSIG63 POLYPEPTIDE

David A. Adler, Bainbridge Island, and Paul O. Sheppard, Granite Falls, both of Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Provisional application No. 60/124,820, filed on Mar. 17, 1999. This application Mar. 17, 2000, Appl. No. 527,345.
Int. Cl. C12P *21/06;* **C12N** *1/12;15/00;5/00;* **C07H** *21/02*
U.S. Cl. 435—69.1 **9 Claims**

1. An isolated polynucleotide wherein the polynucleotide hybridizes to the 4q12–4q13 region of human chromosome 4 under hybridization wash conditions of 0.1×SSC to 2×SSC, 0.1% SDS at

55–65° C. encoding a polypeptide that comprises a sequence of amino acid residues selected from the group consisting of:

(a) the amino acid sequence as shown in SEQ ID NO: 2 from amino acid number 16 (Arg) to amino acid number 37 (Ser);

(b) the amino acid sequence as shown in SEQ ID NO: 2 from amino acid number 38 (Leu) to amino acid number 126 (Ala);

(c) the amino acid sequence as shown in SEQ ID NO: 2 from amino acid number 127 (Pro) to amino acid number 219 (Gln);

(d) the amino acid sequence as shown in SEQ ID NO:2 from amino acid number 16 (Arg) to amino acid number 219 (Gln); and

(e) the amino acid sequence as shown in SEQ ID NO:2 from amino acid number 1 (Met) to amino acid number 219 (Gln).

US 6,331,414 B1

PREPARATION OF HUMAN IGF VIA RECOMBINANT DNA TECHNOLOGY

James M. Lee, San Bruno, and Axel Ullrich, San Francisco, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of application No. 06/506,078, filed on Jun. 20, 1983, now abandoned, which is a continuation-in-part of application No. 06/501,353, filed on Jun. 6, 1983, now abandoned. This application Jun. 5, 1995, Appl. No. 464,255.

Int. Cl. C12N *15/09*

U.S. Cl. 435—69.4 **10 Claims**

1. A process for producing human IGF-I comprising preparing a replicable expression vector capable of expressing the DNA sequence encoding human IGF-I in a prokaryotic host cell, transforming a prokaryotic host cell culture with said vector to obtain a recombinant host cell, culturing said recombinant host cell culture under conditions permitting expression of said human IGF-I-encoding DNA sequence to produce human IGF-I, and recovering said human IGF-I.

US 6,331,415 B1

METHODS OF PRODUCING IMMUNOGLOBULINS, VECTORS AND TRANSFORMED HOST CELLS FOR USE THEREIN

Shmuel Cabilly, Monrovia; Herbert L. Heyneker, Burlingame; William E. Holmes, Pacifica; Arthur D. Riggs, La Verne, and Ronald B. Wetzel, San Francisco, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of application No. 06/483,457, filed on Apr. 8, 1983, now Pat. No. 4,816,567. This application Jun. 10, 1988, Appl. No. 205,419.

Int. Cl. C12N *15/13;15/00;15/63*

U.S. Cl. 435—69.6 **36 Claims**

1. A process for producing an immunoglobulin molecule or an immunologically functional immunoglobulin fragment comprising at least the variable domains of the immunoglobulin heavy and light chains, in a single host cell, comprising the steps of:

(i) transforming said single host cell with a first DNA sequence encoding at least the variable domain of the immunoglobulin heavy chain and a second DNA sequence encoding at least the variable domain of the immunoglobulin light chain, and

(ii) independently expressing said first DNA sequence and said second DNA sequence so that said immunoglobulin heavy and light chains are produced as separate molecules in said transformed single host cell.

US 6,331,416 B1

PROCESS OF EXPRESSING AND ISOLATING RECOMBINANT PROTEINS AND RECOMBINANT PROTEIN PRODUCTS FROM PLANTS, PLANT DERIVED TISSUES OR CULTURED PLANT CELLS

Ziv Shani, Rehovot, and Oded Shoseyov, Karme Yosef, both of Israel, assignors to CBD Technologies Ltd., Rehovot, and Yissum Research and Development Company of the Hebrew University of Jerusalem, Jerusalem, both of Israel

Filed Jun. 10, 1999, Appl. No. 329,234

Int. Cl. C07K *19/00;* **C12N** *15/09;15/36*

U.S. Cl. 435—69.7 **11 Claims**

1. A process of producing a protein of interest in a plant, plant derived tissue or cultured plant cells and of isolating the protein from the plant, plant derived tissue or cultured plant cells, the process comprising the steps of:

(a) providing a plant, a plant derived tissue or cultured plant cells expressing a fusion protein including the protein of interest and a cellulose binding peptide being fused thereto, said fusion protein being compartmentalized within cells of said plant, plant derived tissue or cultured plant cells, so as to be sequestered from cell walls of said cells of said plant, plant derived tissue or cultured plant cells;

(b) homogenizing said plant, plant derived tissue or cultured plant cells, so as to bring into contact said fusion protein with a plant derived cellulosic matter of said plant, plant derived tissue or cultured plant cells, to thereby effect affinity binding of said fusion protein via said cellulose binding peptide to said cellulosic matter, thereby obtaining a fusion protein cellulosic matter complex; and

(c) isolating said fusion protein cellulosic matter complex.

US 6,331,417 B1

DETECTION AND QUANTIFICATION OF HUMAN HERPES VIRUS 7 BY ENZYMIC AMPLIFICATION

Vincent C Emery, and Paul Griffiths, both of London, United Kingdom, assignors to Royal Free Hospital School of Medicine, London, United Kingdom

PCT No. PCT/GB96/01660, § 371 Date Jan. 8, 1998, § 102(e) Date Jan. 8, 1998, PCT Pub. No. WO97/03345, PCT Pub. Date Jan. 30, 1997

PCT Filed Jul. 12, 1996, Appl. No. 981,653

Claims priority, application United Kingdom, Jul. 13, 1995, 9514325

Int. Cl. C12P *19/34;* **C12Q** *1/68;* **C07H** *21/04*

U.S. Cl. 435—91.32 **27 Claims**

1. A method of determining the amount of a target nucleic acid having the sequence shown in SEQ ID NO:1 in a sample which method comprises:

(i) mixing the sample with a predetermined amount of control nucleic acid;

(ii) bringing the mixture formed in (i) into contact with a pair of nucleic acid molecules each comprising:

a primer portion consisting of a contiguous sequence of from 10 to 50 nucleotides that hybridizes to (a) the target nucleic acid molecule represented by SEQ ID NO:1, or (b) to the complement of the molecule of SEQ ID NO:1 in a polymerase chain reaction (PCR) buffer comprising 16 mM $(NH_4)_2SO_4$, 67 mM Tris-HCl (pH 8.8 at 25° C.), 0.01% Tween-20, 2 mM $MgSO_4$ at 50° C.; and optionally a further portion comprising from 1 to 25 nucleotides joined to and immediately 5' to the 5' end of the primer portion

wherein one nucleic acid molecule has a primer portion of type (a) and the other nucleic acid molecule has a primer portion of type (b); and wherein the two primers in combination amplify the target nucleic acid molecule represented by SEQ ID NO:1, or a section thereof, in a polymerase chain reaction;

(iii) performing a nucleic acid amplification reaction, said reaction requiring the presence of the primer portions defined in (ii) to amplify the target nucleic acid sequence or a section thereof and the control nucleic acid or a section thereof;

(iv) determining the relative quantities of the amplified control and target nucleic acids; and

(v) calculating from the determination of (iv) the amount of target nucleic acid in the sample.

US 6,331,418 B1

SACCHARIDE COMPOSITIONS, METHODS AND APPARATUS FOR THEIR SYNTHESIS

Stephen Roth, Gladwyne, Pa., assignor to Neose Technologies, Inc., Horsham, Pa.

Continuation of application No. 08/163,534, filed on Dec. 9, 1993, now abandoned, which is a continuation of application No. 07/955,687, filed on Oct. 2, 1992, now Pat. No. 5,288,637, which is a continuation of application No. 07/683,810, filed on Apr. 11, 1991, now Pat. No. 5,180,674, which is a continuation-in-part of application No. 07/509,560, filed on Apr. 16, 1990, now abandoned. This application Jun. 7, 1995, Appl. No. 480,317.

Int. Cl. C12P *19/18;19/12*

U.S. Cl. 435—97 **23 Claims**

1. A method for the synthesis of a preselected saccharide composition, comprising:

(a) contacting a preselected acceptor moiety which is a carbohydrate and at least two preselected saccharide donor moieties with at least two isolated glycosyltransferases, wherein each of said glycosyltransferases catalyzes formation of a specific stereochemical linkage, wherein

(i) one of said glycosyltransferases catalyzes the transfer of the saccharide unit of one of said saccharide donor moieties to said preselected acceptor moiety to form an intermediate product, and

(ii) the other glycosyltransferase catalyzes the transfer of the saccharide unit of another one of said saccharide donor moieties to said intermediate product, thereby forming said preselected saccharide composition; and

(b) recovering said preselected saccharide composition, wherein

(i) one of said glycosyltransferases is specific only for said preselected acceptor moiety and one of said preselected saccharide donor moieties, and

(ii) the other glycosyltransferase is specific only for said intermerdiate product and another of said preselected saccharide donor moieties, further wherein said isolated glycosyltransferases are obtained by a method comprising:

(c) contacting an acceptor moiety which is a carbohydrate immobilized on a solid or semi-solid support with a mixture of glycosyltransferases under conditions suitable to effect bonding of the glycosyltransferases specific for the acceptor moiety, thereby forming immobilized acceptor moiety-glycosyltransferase complexes;

(d) isolating one of said glycosyltransferases by eluting said glycosyltransferase from the immobilized complexes by contacting the immobilized complexes with a donor moiety comprising a preselected saccharide unit under conditions suitable to effect the glycosyltransferase-catalyzed transfer of the preselected saccharide unit from the donor moiety to the immobilized acceptor moiety, thereby releasing said glycosyltansferase and fornng an immobilized intermediate product;

(e) collecting the released glycosyltransferase; and

(f) repeating steps (c), (d) and (e) at least once such that each time said steps are repeated, the immobilized intermediate product obtained in step (d) functions as the acceptor moiety of step (c),

wherein at least one donor moiety is a saccharide nucleotide selected from the group consisting of a saccharide-terminated uridine phosphate, a saccharide-terminated guanosine phosphate and a saccharide-terminated cytidine phosphate, and wherein at least one acceptor moiety is selected from the group consisting of glucose, galactose, lactose, N-acetylglucosamine, N-acetylgalactosamine, N-acetyllactosamine and galactosyl β1-4 N-acetylglucosamine.

US 6,331,419 B1

L-GLUTAMIC ACID-PRODUCING BACTERIUM AND METHOD FOR PRODUCING L-GLUTAMIC ACID

Mika Moriya; Hiroshi Izui; Eiji Ono; Kazuhiko Matsui; Hisao Ito, and Yoshihiko Hara, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 18, 1999, Appl. No. 271,438

Claims priority, application Japan, Mar. 18, 1998, 10-069068; Oct. 19, 1998, 10-297129

Int. Cl. C12N *1/00;1/20;* **C12P** *1/04;13/04;13/14*

U.S. Cl. 435—110 **12 Claims**

1. A microorganism belonging to the genus Enterobacter or Serratia and having

(1) an ability to produce L-glutamic acid in a culture medium,

(2) and having the following properties:

(a) the microorganism has an increased activity of at least one enzyme selected from the group consisting of citrate synthase, phosphoenolpyruvate carboxylase, and glutamate dehydrogenase; and

(b) the microorganism has decreased activity of α-ketoglutarate dehydrogenase.

US 6,331,420 B1

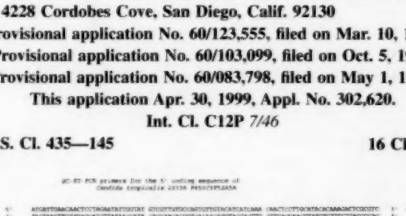
CYTOCHROME P450 MONOOXYGENASE AND NADPH CYTOCHROME P450 OXIDOREDUCTASE GENES AND PROTEINS RELATED TO THE OMEGA HYDROXYLASE COMPLEX OF *CANDIDA TROPICALIS* AND METHODS RELATING THERETO

C. Ron Wilson, 6327 Belmont Rd., Loveland, Ohio 45140; David L. Craft, 26 Rosewood La., Fort Thomas, Ky. 41075; L. Dudley Eirich, 227 W. Stoneridge Dr., Cincinnati, Ohio 45150; Mark Eshoo, 34 Creek Rd., Fairfax, Calif. 94930; Krishna M. Madduri, 14159 Nicholas Dr., Westfield, Ind. 46074; Cathy A. Cornett, 697 Meadow Wood Dr., Apt. #11, Crescent Springs, Ky. 41017; Alfred A. Brenner, 1055 W. College #127, Santa Rosa, Calif. 95401; Maria Tang, 2043 Cliffwood Dr., Fairfield, Calif. 94533; John C. Loper, 6315 Parkman Pl., Cincinnati, Ohio 45213, and Martin Gleeson, 4228 Cordobes Cove, San Diego, Calif. 92130

Provisional application No. 60/123,555, filed on Mar. 10, 1999, Provisional application No. 60/103,099, filed on Oct. 5, 1998, Provisional application No. 60/083,798, filed on May 1, 1998. This application Apr. 30, 1999, Appl. No. 302,620.

Int. Cl. C12P *7/46*

U.S. Cl. 435—145 **16 Claims**



1. Isolated nucleic acid encoding a CYP52A2A protein having the amino acid sequence set forth in SEQ ID NO: 96.

US 6,331,421 B1

DNA CONSTRUCT COMPRISING A VECTOR FOR EXPRESSION OF HUMAN CYTOPLASMIC CU/ZN SUPEROXIDE DISMUTASE IN *E. COLI* AND METHOD OF USE OF SAME

Robert A. Hallewell, San Francisco, and Guy T. Mullenbach, Oakland, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of application No. 08/057,496, filed on May 6, 1993, now abandoned, which is a division of application No. 07/222,352, filed on Jul. 20, 1988, now Pat. No. 5,252,476, which is a continuation of application No. 06/931,920, filed on Nov. 14, 1986, now abandoned, which is a continuation of application No. 06/609,412, filed on May 11, 1984, now abandoned, which is a continuation-in-part of application No. 06/538,607, filed on Oct. 3, 1983, now abandoned. This application Jan. 19, 1995, Appl. No. 375,248.

Int. Cl. C07H *21/02;21/04*

U.S. Cl. 435—189 **8 Claims**

1. A DNA construct comprising an expression vector, wherein said expression vector comprises in downstream order of transcription:

(1) a promoter;

(2) a ribosomal binding site;

(3) an initiation codon and a DNA spacer sequence positioned between the ribosomal binding site and initiation codon;

(4) a human cytoplasmic Cu/Zn superoxide dismutase structural gene in reading frame with said initiation codon having a stop codon at the 3'-terminus of said genes,

wherein said DNA spacer sequence, said initiation codon, and the first two codons of said human cytoplasmic Cu/Zn superoxide dismutase structural gene comprise the sequence:

$X_nX_nX_nX_nATGGCXACX$

wherein each n is independently 1, and each X is independently A, C, T, or G; and

(5) a transcription terminator,

wherein said DNA construct, upon introduction into *E. coli*, causes the expression of active human cytoplasmic Cu/Zn superoxide dismutase.

US 6,331,422 B1

ENZYME-MEDIATED MODIFICATION OF FIBRIN FOR TISSUE ENGINEERING

Jeffrey A. Hubbell, Zumiken, and Jason Schense, Zürich, both of Switzerland, assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 8, 1998, Appl. No. 57,052

Int. Cl. C12N *9/10*

U.S. Cl. 435—193 **39 Claims**

1. An implantable device having at least one surface comprising a composition, wherein the composition comprises a fibrin network and a non-fibrin peptide, wherein the peptide is not fibrin or a fragment thereof, the peptide having an amino acid sequence that comprises one transglutaminase substrate domain and a bioactive domain, wherein the peptide is covalently bound to the fibrin network by the transglutaminase substrate domain.

US 6,331,423 B1

ISOLATED HUMAN KINASE PROTEINS, NUCLEIC ACID MOLECULES ENCODING HUMAN KINASE PROTEINS, AND USES THEREOF

Karl Guegler, Menlo Park, Calif.; Ellen M. Beasley, Darnestown, and Valentina Di Francesco, Rockville, both of Md., assignors to PE Corporation (NY), Norwalk, Conn.

Provisional application No. 60/208,331, filed on Jun. 1, 2000. This application Dec. 18, 2000, Appl. No. 738,894.

Int. Cl. C12N *9/12;1/20;15/00;5/00;* **C07H** *21/04*

U.S. Cl. 435—194 **10 Claims**

1. An isolated nucleic acid molecule consisting of a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence that encodes an amino acid sequence shown in SEQ ID NO:2;

(b) a nucleic acid molecule consisting of the nucleic acid sequence of SEQ ID NO:1;

(c) a nucleic acid molecule consisting of the nucleic acid sequence of SEQ ID NO:3; and

(d) a nucleotide sequence that is completely complementary to a nucleotide sequence of (a)–(c).

US 6,331,424 B1

MOTOR PROTEINS AND METHODS FOR THEIR USE

Christophe Beraud, San Francisco, and Roman Sakowicz, Foster City, both of Calif., assignors to Cytokinetics, Inc., South San Francisco, Calif.

Continuation-in-part of application No. 09/295,612, filed on Apr. 20, 1999, and a continuation-in-part of application No. 09/314,464, filed on May 18, 1999. This application Jun. 15, 2000, Appl. No. 594,669.

Int. Cl. C12N *9/16;1/20;15/00;5/00;* **C07K** *1/00*

U.S. Cl. 435—196 **11 Claims**

1. An isolated protein, wherein the protein has an amino acid sequence of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14.

US 6,331,425 B1

RECOMBINANT PROTEIN HAVING BACTERIOPHAGE ENDOSIALIDASE ENZYMATIC ACTIVITY

Peter William Taylor, Billingshurst; John Paul Luzio, Little Eversden, and Jonathan Mark Bryant, Exeter, all of United Kingdom, assignors to Endozyme Limited, West Sussex, United Kingdom

PCT No. PCT/GB96/01577, § 371 Date Apr. 2, 1998, § 102(e) Date Apr. 2, 1998, PCT Pub. No. WO97/02351, PCT Pub. Date Jan. 23, 1997

PCT Filed Jul. 1, 1996, Appl. No. 983,275

Claims priority, application United Kingdom, Jul. 5, 1995, 9513683

Int. Cl. C12N *9/00;9/14;9/24;1/20*

U.S. Cl. 435—200 **18 Claims**

1. An isolated and purified polynucleotide consisting of nucleotides 172 to 1744 of SEQ ID NO:1.

US 6,331,426 B1

BACTERIAL GALACTANASES AND USE THEREOF

Mads Eskelund Bjørnvad, Frederiksberg; Ib Groth Clausen, Hillerød; Martin Schülein, Copenhagen; Lisbeth Bech, Hillerød; Peter Rahbek Østergaard, Virum, and Carsten Sjøholm, Allerød, all of Denmark, assignors to Novozymes A/S, Bagsvaerd, Denmark

Provisional application No. 60/125,885, filed on Mar. 24, 1999, Provisional application No. 60/138,445, filed on Jun. 10, 1999. This application Feb. 11, 2000, Appl. No. 502,653.

Claims priority, application Denmark, Feb. 11, 1999, 1999 00184; Jun. 7, 1999, 1999 00799

Int. Cl. C12P *21/06;* **C12N** *9/00;9/24;9/26*

U.S. Cl. 435—201 **7 Claims**

1. An isolated polynucleotide molecule encoding a polypeptide having galactanase activity selected from the group consisting of:

a) polynucleotide molecules comprising a nucleotide sequence as shown in SEQ ID NO.11;

b) polynucleotide molecules that encode a polypeptide that is at least 70% identical to the amino acid sequence as shown in SEQ ID NO.12; and

c) degenerate nucleotide sequences of (a) or (b).

US 6,331,427 B1

PROTEASE HOMOLOGS

Keith E. Robison, Wilmington, Mass., assignor to Millennium Pharmaceuticals, Inc., Cambridge, Mass.

Filed Mar. 26, 1999, Appl. No. 280,116
Int. Cl. C12N *9/64;15/57;15/79;* C12Q *1/37;1/38*
U.S. Cl. 435—226 7 Claims

1. A method for producing an isolated polypeptide comprising an amino acid sequence encoded by the nucleotide sequence shown in SEQ ID NO:257 said method comprising introducing a nucleotide sequence encoding said amino acid sequence into a host cell and culturing the host cell under conditions in which the polypeptide is expressed from the nucleotide sequence.

US 6,331,428 B1

HEXULOSE PHOSPHATE ISOMERASE GENE

Nobuo Kato, Kameoka, Japan, assignor to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of application No. 09/033,647, filed on Mar. 3, 1998, now abandoned. This application Nov. 4, 1998, Appl. No. 185,501.
Claims priority, application Japan, Jul. 9, 1997, 10-194808; Aug. 28, 1997, 9-233131
Int. Cl. C12N *9/90;1/20;15/63;5/00;* C07H *21/04*
U.S. Cl. 435—233 20 Claims

1. An isolated DNA coding for a protein which comprises the amino acid sequence of SEQ ID NO: 13, wherein

(a) the DNA comprises the nucleotide sequence of bases 608 to 1204 of SEQ ID NO: 12; or

(b) the DNA is hybridizable with the nucleotide sequence of bases 608 to 1204 of SEQ ID NO: 12 under a condition in which washing is performed at 60° C., and at a salt concentration corresponding to 1×SSC and 0.1% SDS, and wherein the DNA codes for a protein having hexulose phosphate isomerase activity,

with the proviso that the DNA does not comprise the nucleotide sequence of SEQ ID NO: 16.

US 6,331,429 B1

CULTURE MEDIUM FOR MICROORGANISMS

Masashi Ushiyama, Yokohama, Japan, assignor to Chisso Corporation, Osaka-Fu, Japan

Continuation of application No. PCT/JP97/02470, filed on Jul. 16, 1997. This application Jan. 6, 1999, Appl. No. 225,467.
Claims priority, application Japan, Jul. 17, 1996, 8-207914
Int. Cl. C12N *1/00;1/20;* C12Q *1/00;1/02;1/24*
U.S. Cl. 435—243 12 Claims

1. A material for culture media comprising a fiber layer; a polymeric compound layer A free of a color former and a selecting agent; and a polymeric compound layer B containing a color former and/or a selecting agent, which are laminated together in this order, wherein the polymeric compound for the layers A and B is one whose 4% by weight aqueous solution has a viscosity, as determined at 20° C. of not less than 10 cps and the polymeric compound for at least one of the layers A and B is polyvinyl alcohol.

US 6,331,430 B1

MOTOR PROTEINS AND METHODS FOR THEIR USE

Christophe Beraud, San Francisco, and Richard Freedman, San Mateo, both of Calif., assignors to Cytokinetics, Inc., South San Francisco, Calif.

Filed Aug. 8, 2000, Appl. No. 634,957
Int. Cl. C12N *1/20;9/16;5/00;* C12Q *1/68;* C07H *21/04*
U.S. Cl. 435—252.3 16 Claims

1. An isolated nucleic acid sequence encoding a motor protein, wherein the motor protein has the following properties: (i) the protein has microtubule stimulated ATPase activity; and (ii) the protein has a sequence that has greater than 95% sequence identity to SEQ ID NO:2 or SEQ ID NO:4 as measured using BLAST sequence comparison algorithm.

US 6,331,431 B1

VACUUM DEVICE AND METHOD FOR ISOLATING PERIPLASMIC FRACTION FROM CELLS

Scott M. Glaser, San Diego; William D. Huse, Del Mar, and William P. MacConnell, Cardiff, all of Calif., assignors to Ixsys, Inc., San Diego, Calif.

Filed Nov. 28, 1995, Appl. No. 563,654
Int. Cl. B01D *35/00;* C12N *1/06;1/02;* C12M *1/00*
U.S. Cl. 435—261 23 Claims

1. A device for isolating a periplasmic fraction of cells having an inner cell wall and an outer membrane, comprising:

a vacuum chamber having an opening with means for supporting a sample chamber removably attachable to the opening and a vacuum aperture, and

a removable sample chamber capable of containing the cells having an outer membrane, wherein the sample chamber is removably attached to the opening of the vacuum chamber, forming a vacuum-tight seal with the opening,

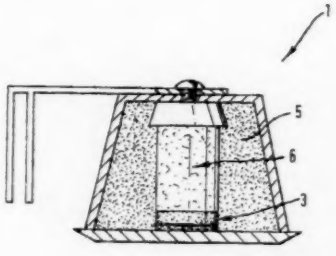
wherein the sample chamber has a chamber wall that is a neutral nylon membrane having an average pore diameter of about 1 to about 1.2 micron, whereby the membrane of the chamber wall is permeable to periplasmic small molecules and macromolecules, but not permeable to cells having an intact inner cell wall.

US 6,331,432 B1

DEVICE AND METHOD FOR CLEANING AND SANITIZING A FOOD RESERVOIR

Derrick Bautista, Sherman, and David Collins-Thompson, New Milford, both of Conn., assignors to Nestec S.A., Vevey, Switzerland

Filed Jul. 11, 2000, Appl. No. 613,722
Int. Cl. D06M *16/00*
U.S. Cl. 435—264 20 Claims



1. A device for cleaning and sanitizing a beverage or food reservoir comprising:

a first compartment containing a cleaning component comprising at least one or more enzymes in an amount sufficient to cleanse the reservoir; and

a second compartment comprising at least one antimicrobial substance in an amount sufficient to sanitize the reservoir,

wherein the first compartment and the second compartment are separated by a barrier that degrades upon contact with an aqueous medium and that delays the release of the antimicrobial substance from the second compartment until after the cleaning component has cleansed the reservoir.

US 6,331,433 B1

HUMAN T CELL LEUKEMIA CELL LINE DESIGNATED D1.1

Seth Lederman, New York; Leonard Chess, Scarsdale, and Michael J. Yellin, Riverdale, all of N.Y., assignors to The Trustees of Columbia University in the city of New York, New York, N.Y.

Division of application No. 08/485,622, filed on Jun. 7, 1995, which is a division of application No. 07/792,728, filed on Nov. 15, 1991, now Pat. No. 5,474,771. This application Apr. 14, 1999, Appl. No. 291,382.

Int. Cl. C12N *5/06;5/00*

U.S. Cl. 435—325 4 Claims

1. A human T cell leukemia cell line designated D1.1 having ATCC Accession No. CRL 10915.

US 6,331,434 B1

NITROGEN-CONTAINING SILICONE USEFUL FOR COMPACTING NUCLEIC ACID SEQUENCES AND USE FOR TRANSFORMING CELLS

Rachel Decor; Charles Mioskowski, both of Strasbourg; Marc Schmutz, Dingsheim, and Alain Wagner, Strasbourg, all of France, assignors to Aventis CropScience SA, Lyons, France

Continuation of application No. 09/286,406, filed on Apr. 5, 1999, now Pat. No. 6,068,980. This application Mar. 9, 2000, Appl. No. 521,822.

Claims priority, application France, Apr. 6, 1998, 98 04510

Int. Cl. C12N *15/88*

U.S. Cl. 435—458 6 Claims

1. Method of transforming cells in which an appropriate quantity of nucleic acid fragments is introduced into the cells, characterized in that the nucleic acid fragments are introduced in the form of a nucleic acid composition which comprises, in an appropriate vehicle, at least one nucleic acid fragment and at least one compacting agent comprising a nitrogen-containing silicone, wherein the nitrogen-containing silicone comprises at least one silicone unit which follows:

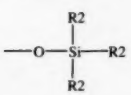
$$Si\ R1\ O_{(3-x-y)/2}R2_xR3_y$$

in which:

R1 is a nitrogen-containing hydrocarbon radical,

R2 represents the R1 radical, a hydroxyl radical or a hydrocarbon radical,

R3 represents R2 or the radical of formula



in which R2 is defined above,

x and y, which are identical or different are 0, 1 or 2, it being understood that the sum x+y is less than or equal to 3.

US 6,331,435 B1

ERYTHROCYTE SEDIMENTATION RATE CONTROL

Wayne R. Hengstenberg, Clark, N.J., assignor to Streak Laboratories, Inc., La Vista, Nebr., and Hematronix Inc., Plano, Tex.

Continuation of application No. 09/274,428, filed on Mar. 22, 1999, now Pat. No. 6,051,433, which is a division of application No. 08/538,959, filed on Oct. 4, 1995, now Pat. No. 5,888,822. This application Oct. 12, 1999, Appl. No. 415,667. This patent is subject to a terminal disclaimer.

Int. Cl. G01N *15/04*

U.S. Cl. 436—10 19 Claims

1. A method of monitoring the accuracy and precision of an erythrocyte sedimentation rate (ESR) test apparatus and method comprising the steps of:

a. providing a synthetic erythrocyte sedimentation rate control capable of producing measured ESR values within a predictable range;

b. providing an erythrocyte sedimentation rate test apparatus;

c. performing an erythrocyte sedimentation rate (ESR) determination using said synthetic erythrocyte sedimentation rate control and said erythrocyte sedimentation rate test apparatus; and

d. comparing the ESR determination performed in step c. with the predicted range of ESR values expected from the erythrocyte sedimentation rate control.

US 6,331,436 B1

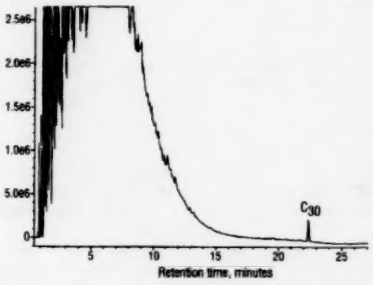
TRACERS FOR HEAVY OIL

William C. Richardson, Bellaire, Tex., and Kevin D. Kimber, Riau, Indonesia, assignors to Texaco, Inc., White Plains, N.Y.

Filed Jan. 7, 1999, Appl. No. 226,480

Int. Cl. G01N *33/24*

U.S. Cl. 436—27 12 Claims



1. A process for monitoring the flow of a traced fluid in a subterranean formation, the process comprising:

injecting a tracer containing fluid into at least one injection well, said well being in fluid communication wit the subterranean formation; and

analyzing at least one sample from at least one producing source, said producing source being in fluid communication with the subterranean formation,

wherein the term comprises an organic compound having more than 25 carbons that: is at least patally soluble in the traced fluid; is compatible with the characteristics of the thawed fluid; is involatile upon the injection of steam into the subterranean formation; is thermally and chemically stable under the conditions encountered in the subterranean formation and has a negligible effect on metals content.

US 6,331,437 B1

AUTOMATIC HANDLER FOR FEEDING CONTAINERS INTO AND OUT OF AN ANALYTICAL INSTRUMENT

Beri Cohen, Hartsdale; Thomas W. DeYoung, Stormville; Krunoslav Esteban Draganovic, Upper Nyack, and Paul E. Purpura, Yorktown, all of N.Y., assignors to Bayer Corporation, Tarrytown, N.Y.

Filed Jul. 14, 1998, Appl. No. 115,391

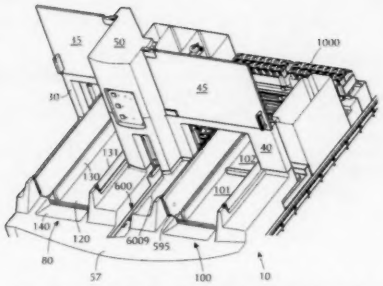
Int. Cl. G01N *35/02*

U.S. Cl. 436—43 12 Claims

1. A sample handler for an analytical instrument, said sample handler handling a rack which holds a plurality of containers, said rack having a left side and a right side with tabs located thereon, said rack being transported within said sample handler, said sample handler comprising:

a feeder for feeding said rack comprising a first set of side walls from which said rack is suspended by said tabs,

a movable tray having a second set of side walls said tray being placed within said feeder so that the first and second sets of



side walls are vertically aligned, wherein said tray has guide rails which run parallel to each other along the longitudinal length of said tray to prevent said rack from skewing in said tray; and

a walking beam mechanism for sequentially moving said tray in an upward direction, a first lateral direction, a downward direction and a second lateral direction, opposite said first lateral direction;

whereby when said tray is moved in an upward direction the tabs of said rack are engaged and lifted by said second side walls, disengaging the tabs from said first side walls.

US 6,331,438 B1

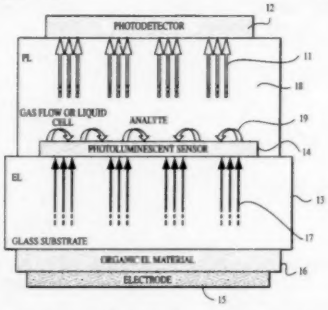
OPTICAL SENSORS AND MULTISENSOR ARRAYS CONTAINING THIN FILM ELECTROLUMINESCENT DEVICES

Jonathan W. Aylott; Zoe Chen-Esterlit, both of Ann Arbor, Mich.; Jon H. Friedl, Ames, Iowa; Raoul Kopelman, Ann Arbor, Mich.; Vadim N. Savvateev, and Joseph Shinar, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa, and The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Nov. 24, 1999, Appl. No. 448,499

Int. Cl. G01N *21/64*

U.S. Cl. 436—172 **90 Claims**



1. An optical sensor for detecting an analyte of interest in a sample, said optical sensor comprising;

a sensing layer containing an indicator agent which can react optically with said analyte,

a thin film electroluminescent device comprising a luminescent layer which emits light of a predetermined wavelength, wherein said luminescent layer is optically coupled to said sensing layer,

wherein said indicator agent absorbs light energy of said predetermined wavelength and in the presence of at least one analyte of interest generates an optical response which is optically detectable and recognizable as indicating the presence of the analyte of interest, and

wherein said thin film electroluminescent device comprises an organic electroluminescent material.

US 6,331,439 B1

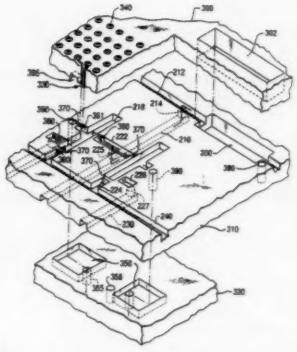
DEVICE FOR SELECTIVE DISTRIBUTION OF LIQUIDS

Satyam Choudary Cherukuri; Robert Richard Demers, both of Cranbury; Zhong Hui Hugh Fan, Plainsboro; Aaron W. Levine, Lawrenceville; Sterling Edward McBride, Lawrence Township, Mercer County, and Peter John Zanzucchi, West Windsor Township, Mercer County, all of N.J., assignors to Orchid BioSciences, Inc., Princeton, N.J.

Division of application No. 08/726,953, filed on Oct. 7, 1996, now Pat. No. 5,980,704, which is a division of application No. 08/483,331, filed on Jun. 7, 1995, now Pat. No. 5,603,351. This application Sep. 14, 1998, Appl. No. 152,861.

Int. Cl. G01N *1/28*

U.S. Cl. 436—174 **8 Claims**



1. A method of performing combinatorial processes, comprising the steps of:

providing an array having a top layer having reservoirs therein, a distribution plate adjacent to the top layer and a removable bottom plate having a plurality of reaction cells, wherein the distribution plate comprises at least one micropump, at least one microgate, at least one distribution reservoir, or at least one horizontal microchannel defined between the distribution plate and the top layer;

loading the reservoirs of the top layer with a plurality of fluids;

distributing fluids from the reservoirs through the distribution plate;

applying said plurality of fluids to said plurality of reaction cells sequentially in accordance with a predefined sequence until a combinatorial process is completed; and

removing the bottom plate of said array and analyzing the contents of the reaction cells.

US 6,331,440 B1

PEPTIDE BINDING THE KLVFF-SEQUENCE OF AMYLOID-β

Christer Nordstedt, Mulhouse, France; Jan Näslund, New York, N.Y.; Johan Thyberg, Stockholm, Sweden; Lars O. Tjernberg, Spånga, Sweden, and Lars Terenius, Uppsala, Sweden, assignors to Karolinska Innovations AB, Stockholm, Sweden

Continuation of application No. PCT/SE96/01621, filed on Dec. 9, 1996, Provisional application No. 60/009,386, filed on Dec. 29, 1995. This application Jun. 10, 1998, Appl. No. 95,106.

Claims priority, application Sweden, Dec. 12, 1995, 9504467

Int. Cl. G01N *33/566;33/53;* **A61K** *38/08*

U.S. Cl. 436—501 **7 Claims**

1. A method for identifying an organic compound which is capable of inhibiting the polymerization of an amyloid beta peptide, wherein said amyloid beta peptide contains the KLVFF sequence comprising the following steps:

(i) producing a first reaction composition comprising an amyloid beta peptide, wherein said amyloid beta peptide contains the KLVFF sequence and further comprising a first compound having the formula:

$$K—L—X—F \quad (I)$$

wherein X is one or two amino acid residues imparting to the compound of formula (I) the ability to bind to the KLVFF sequence in amyloid beta peptide with the proviso that X is not proline;

wherein said first compound inhibits the polymerization of said amyloid beta peptide contained in said composition based on its binding to the amyloid beta peptide;

(ii) producing a second reaction composition containing amyloid beta peptide which contains the KLVFF sequence, and further containing said first compound as recited in (i), wherein said second reaction composition is identical to the first reaction composition except for the additional presence of a second compound, which is an organic compound that is being screened for whether said organic compound binds to KLVFF in amyloid beta peptide;

(iii) comparing the inhibition of polymerization of amyloid beta peptide in said first and second reaction compositions by the first compound; and

(iv) determining whether the second compound inhibits the polymerization of an amyloid beta peptide containing the KLVFF sequence.

US 6,331,441 B1

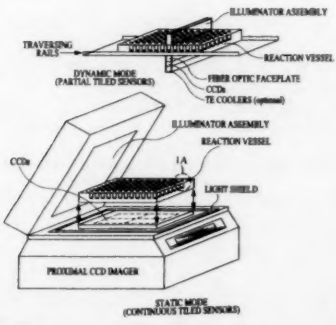
MULTIPLEXED MOLECULAR ANALYSIS APPARATUS AND METHOD

William J. Balch; Michael E. Hogan, both of The Woodlands, and Leopoldo G. Mendoza, Conroe, all of Tex., assignors to Genometrix Genomics Incorporated, The Woodlands, Tex.

Division of application No. 09/002,170, filed on Dec. 31, 1997, now Pat. No. 6,083,763, Provisional application No. 60/034,627, filed on Dec. 31, 1996. This application Dec. 21, 1998, Appl. No. 217,154.

Int. Cl. G01N *33/543*

U.S. Cl. 436—518 **6 Claims**



1. A small molecule universal array comprising a plurality of wells, wherein each well comprises a plurality of biosites, wherein each biosite comprises only one specie of immobilized small molecule and at least one biosite has a specie of small molecule differing from a second biosite, and

a bi-specific molecule comprising two domains, wherein the first domain binds to the immobilized small molecule and the second domain comprises an analyte-binding domain.

US 6,331,442 B1

PRE-PATTERNED CONTACT FILL CAPACITOR FOR DIELECTRIC ETCH PROTECTION

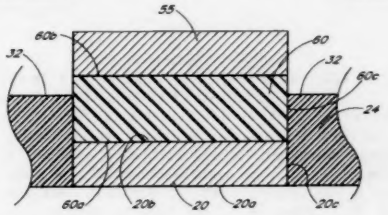
Daryl C. New, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of application No. 08/788,087, filed on Jan. 22, 1997, now Pat. No. 5,985,676, and a division of application No. 08/559,186, filed on Nov. 13, 1995, now Pat. No. 5,631,804. This application Jan. 18, 1999, Appl. No. 232,534.

This patent is subject to a terminal disclaimer.

Int. Cl. H01L *21/8242*

U.S. Cl. 438—3 **25 Claims**



1. A method of forming a capacitor in an integrated circuit, the method comprising the steps of:

forming a bottom electrode in electrical contact with a circuit node of the integrated circuit;

forming an insulating layer over the bottom electrode;

forming a contact via through the insulating layer to at least partially expose the bottom electrode;

depositing a dielectric material into the contact via to at least completely fill the previously formed contact via, the dielectric material having an as-deposited top surface; and

forming a top electrode directly on the as-deposited top surface of the deposited dielectric material.

US 6,331,443 B1

METHOD FOR MANUFACTURING A LIQUID CRYSTAL DISPLAY

Jueng-gil Lee, Kyungkido; Jung-ho Lee, and Hyo-rak Nam, both of Kyungki-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

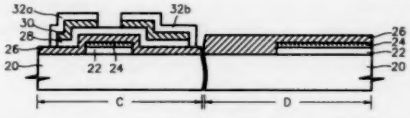
Continuation of application No. 08/754,644, filed on Nov. 21, 1996, now Pat. No. 6,008,065. This application Nov. 19, 1999, Appl. No. 443,386.

Claims priority, application Rep. of Korea, Nov. 21, 1995, 95-42618; Apr. 30, 1996, 96-13912

This patent is subject to a terminal disclaimer.

Int. Cl. H01L *21/00*

U.S. Cl. 438—30 **13 Claims**



1. A method for manufacturing a TFT substrate, the method comprising:

(a) forming a gate electrode and a gate pad by a first photolithography process by sequentially depositing a first metal film and a second metal film over a substrate in a TFT area and a pad area, respectively;

(b) forming an insulating film over the entire surface of the substrate on which the gate electrode and the gate pad are formed;

(c) forming a semiconductor film over the TFT area using a second photolithography process;

(d) forming a source electrode and a drain electrode in the TFT area using a third photolithography process, the source electrode and drain electrode comprising a third metal film;

(e) forming a protection film pattern over the source electrode and the drain electrode in the TFT area and over the insulating film in the gate pad area, using a fourth photolithography process, the protection film pattern exposing a portion of the drain electrode and a top surface of the second metal film; and

(f) forming a first and second pixel electrode pattern over the substrate and the protection film pattern using a fifth photolithography process, the first pixel electrode pattern being connected to the drain electrode in the TFT area, and the second pixel electrode pattern being connected to the top surface of the second metal film of the gate pad in the pad area.

US 6,331,444 B1

METHOD FOR MANUFACTURING INTEGRATED DEVICES INCLUDING ELECTROMECHANICAL MICROSTRUCTURES, WITHOUT RESIDUAL STRESS

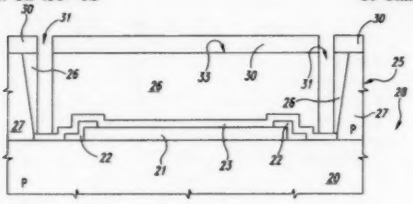
Paolo Ferrari, Gallarate; Benedetto Vigna, Pietrapertosa; Pietro Montanini, Melegnano; Laura Castoldi, Abbiategrasso, and Marco Ferrera, Domodossola, all of Italy, assignors to STMicroelectronics S.r.l., Agrate Brianza, Italy

Filed Feb. 8, 2000, Appl. No. 499,919

Claims priority, application European Pat. Off., Sep. 2, 1999, 99830068

Int. Cl. H01L *21/00*

U.S. Cl. 438—52 **10 Claims**



1. A method for manufacturing integrated devices including electromechanical microstructures, comprising the steps of forming a wafer of semiconductor material, including a substrate and an operative layer; forming an electromechanical microstructure in an area of said operative layer, and wherein before said step of forming a microstructure, the steps are carried out of forming a stress release trench, surrounding said area in said operative layer, and carrying out an annealing of said area including the stress release trench to release stress in the area.

US 6,331,445 B1

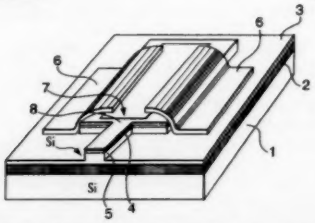
PHOTOTONIC DEVICE WITH STRAIN-INDUCED THREE DIMENSIONAL GROWTH MORPHOLOGY

Siegfried Janz, Gloucester; Hughes Lafontaine, Ottawa, and Dan-Xia Xu, Gloucester, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed May 7, 1999, Appl. No. 306,732

Int. Cl. H01L *21/20*

U.S. Cl. 438—57 **12 Claims**



1. A method of fabricating a photonic device comprising the steps of:

providing a substrate; and

providing a quantum well structure on said substrate by alternately growing layers of a first material and a second material providing a barrier layer, said first material forming quantum wells and comprising at least two components, and said layers of said first material being grown in a three dimensional morphology growth mode such that the thickness of said layers of said first material varies over the surface thereof to reduce local strain energy and increase local concentrations of one of said components.

US 6,331,446 B1

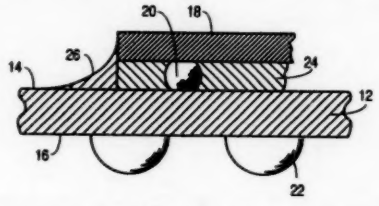
PROCESS FOR UNDERFILLING A CONTROLLED COLLAPSE CHIP CONNECTION (C4) INTEGRATED CIRCUIT PACKAGE WITH AN UNDERFILL MATERIAL THAT IS HEATED TO A PARTIAL GEL STATE

Duane Cook; Venkatesan Murali, both of San Jose; Suresh Ramalingam, Fremont, and Nagesh Vodrahalli, Cupertino, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 3, 1999, Appl. No. 261,648

Int. Cl. H01L *21/44;21/48;21/50*

U.S. Cl. 438—106 **35 Claims**



1. A process for underfilling an integrated circuit that is mounted to a substrate, comprising:

dispensing a first underfill material heated to a first temperature between the integrated circuit and the substrate; and,

after dispensing the first underfill material, heating the first underfill material to a second temperature greater than the first temperature to achieve a partial gel state.

US 6,331,447 B1

HIGH DENSITY FLIP CHIP BGA

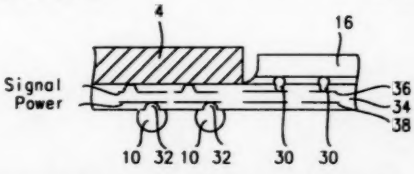
Chung W. Ho, Monte Sereno, Calif., assignor to Thin Film Module, Inc., Milpitas, Calif.

Division of application No. 09/332,427, filed on Jun. 14, 1999, now Pat. No. 6,221,693. This application Apr. 20, 2001, Appl. No. 838,893.

This patent is subject to a terminal disclaimer.

Int. Cl. H01L *21/48*

U.S. Cl. 438—108 **13 Claims**



1. A method of mounting Ball Grid Array chips comprising:

Providing a metal substrate said metal substrate having a first surface and a second surface;

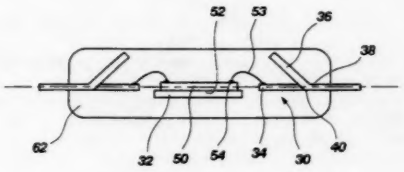
cleaning of the first surface of said metal substrate;

Depositing a layer of dielectric over said first surface;

Depositing an interconnect layer on top of said dielectric thereby forming the first layer of an interconnect substrate;

Creating a first Build Up Multilayer (BUM) layer over said interconnect layer thereby forming the second layer of an interconnect substrate;
Creating a second Build Up Multilayer (BUM) layer over said first Build Up Multilayer layer thereby forming the third layer of an interconnect substrate;
Coating said second BUM layer as a solder mask;
Exposing the metal pads within said second BUM layer thereby creating openings for BGA solder connections;
Masking and etching said second surface of said metal substrate thereby creating one or more openings for the insertion of said BGA chips thereby furthermore exposing portions of said dielectric within said openings;
Creating openings in said exposed dielectric thereby providing electrical access to said interconnect substrate for said BGA chips; and
Subdividing said metal substrate into individual BGA substrates.

US 6,331,448 B1
LEADFRAMES INCLUDING OFFSETS EXTENDING FROM A MAJOR PLANE THEREOF, PACKAGED SEMICONDUCTOR DEVICES INCLUDING SAME, AND METHODS OF DESIGNING AND FABRICATING SUCH LEADFRAMES
Syed Sajid Ahmad, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Division of application No. 09/082,105, filed on May 20, 1998. This application Aug. 28, 2000, Appl. No. 649,247.
Int. Cl. H01L *21/44*
U.S. Cl. 438—112 **19 Claims**



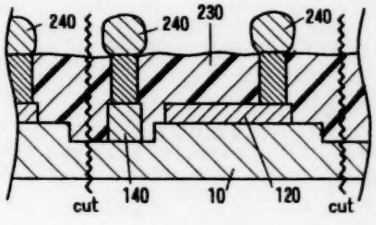
1. A method for designing a leadframe, comprising:
configuring a leadframe extending along a major plane;
locating a die mounting region of said lead frame proximate said major plane and substantially parallel therewith;
configuring a plurality of leads of said lead frame proximate said die mounting region and extending therefrom; and
configuring at least one offset of said lead frame not comprising a lead to extend at a non-perpendicular angle to said major plane for locational contact of said at least one offset with a surface of processing equipment during processing of said lead frame.

US 6,331,449 B1
METHOD OF FORMING A DICING AREA OF A SEMICONDUTOR SUBSTRATE
Takashi Ohsumi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Oct. 14, 1998, Appl. No. 172,150
Claims priority, application Japan, Dec. 26, 1997, 9-360293
Int. Cl. H01L *21/44*
U.S. Cl. 438—113 **3 Claims**

1. A method of manufacturing a semiconductor device, comprising:
providing a semiconductor substrate having a principal surface which includes a plurality of device areas separated by at least one dicing area, wherein the at least one dicing area includes a plurality of closely adjacent projections defining a depression therebetween;

covering the plurality of device areas with a mask layer;
etching the at least one dicing area using said mask layer as a mask to remove the plurality of projections;
forming a conductive layer over the semiconductor substrate including the at least one dicing area from which the projections have been removed;
forming an insulating layer over the conductive layer;
forming openings in the insulating layer; and
forming bump electrodes in the openings of said insulating layer.

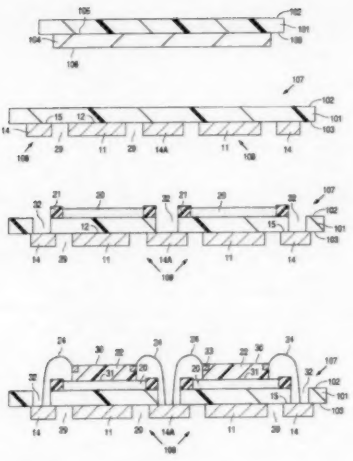
US 6,331,450 B1
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE USING GROUP III NITRIDE COMPOUND
Toshiya Uemura, Aichi-ken, Japan, assignor to Toyoda Gosei Co., Ltd., Aichi-ken, Japan
Filed Dec. 22, 1999, Appl. No. 468,638
Claims priority, application Japan, Dec. 22, 1998, 10-364965
Int. Cl. H01L *21/00;21/44;21/48;21/50;* **B23K** *31/02*
U.S. Cl. 438—114 **23 Claims**



3. A method for manufacturing a plurality of sealed semiconductor devices comprising:
providing a plurality of semiconductor device units integrated together on a common substrate having a Group III nitride compound semiconductor layer, each of the semiconductor device units comprising a positive electrode and a negative electrode;
forming metal pillars on respective electrodes;
laminating a curable sealing resin on a surface of the common substrate on which electrodes and metal pillars are formed;
curing the sealing resin; and
thereafter dividing the substrate and the cured sealing resin into a plurality of individual sealed semiconductor devices.

US 6,331,451 B1
METHODS OF MAKING THIN INTEGRATED CIRCUIT DEVICE PACKAGES WITH IMPROVED THERMAL PERFORMANCE AND SUBSTRATES FOR MAKING THE PACKAGES
James M. Fusaro, Scottsdale; Robert F. Darveaux, Higley, and Pablo Rodriguez, Gilbert, all of Ariz., assignors to Amkor Technology, Inc., Chandler, Ariz.
Filed Nov. 5, 1999, Appl. No. 434,546
Int. Cl. H01L *21/58*
U.S. Cl. 438—126 **36 Claims**

26. A method of making a substrate for making an integrated circuit package, said method comprising:



providing a planar nonconductive sheet having a first surface and an opposite second surface;

forming first apertures in the nonconductive sheet;

applying a first metal layer to the first surface of the nonconductive sheet, said second surface being free of metal;

patterning the metal layer to form a planar die pad and planar leads adjacent to the die pad; and

wherein the die pad and the leads each have a first surface on the first surface of the nonconductive sheet, and each first aperture is juxtaposed with a first surface of lead.

US 6,331,452 B1

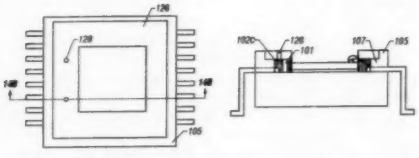
METHOD OF FABRICATING INTEGRATED CIRCUIT PACKAGE WITH OPENING ALLOWING ACCESS TO DIE

Peter J. Gall, Mountaun View, Calif., assignor to Verdicom, Inc., Santa Clara, Calif.

Filed Apr. 12, 1999, Appl. No. 290,456

Int. Cl. H01L *21/48*

U.S. Cl. 438—127 **27 Claims**



1. A method for packaging an integrated circuit (I.C.) die, comprising:

mounting an I.C. die on a base of an open-tooled package, said open-tooled package comprising a substrate, said substrate having said base, a plurality of sidewalls, and a plurality of leads extending through at least one of said sidewalls, said I.C. die having a plurality of bond pads;

forming an electrical connection between at least one of said plurality of bond pads and a corresponding one of said plurality of leads;

filling a first portion of a cavity with a first non-conductive material, said cavity being defined between said sidewalls and said I.C. die, said first non-conductive material contacting a first subset of said plurality of leads; and

filling a second portion of said cavity with a first conductive material, said first conductive material contacting a second subset of said plurality of leads.

US 6,331,453 B1

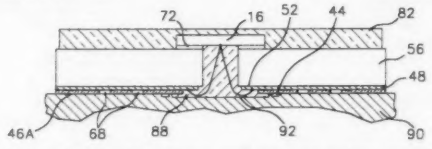
METHOD FOR FABRICATING SEMICONDUCTOR PACKAGES USING MOLD TOOLING FIXTURE WITH FLASH CONTROL CAVITIES

Todd O. Bolken, Meridian; David L. Peters, Boise; Patrick W. Tandy, Boise, and Chad A. Cobbley, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Dec. 16, 1999, Appl. No. 465,350

Int. Cl. H01L *21/44;21/48;21/50*

U.S. Cl. 438—127 **25 Claims**



1. A method for fabricating a semiconductor package comprising:

providing a substrate having a first surface and an opposing second surface;

providing a mold tooling fixture comprising a mold cavity configured to mold an encapsulant on the first surface, and at least one flash control cavity proximate to the mold cavity configured to collect mold flash from the mold cavity;

molding the encapsulant on the first surface with the flash control cavity collecting and preventing the flash from contaminating a selected area of the first surface; and

molding a second encapsulant on the second surface.

US 6,331,454 B1

ATOMIC-LEVEL ELECTRONIC NETWORK AND METHOD OF FABRICATION

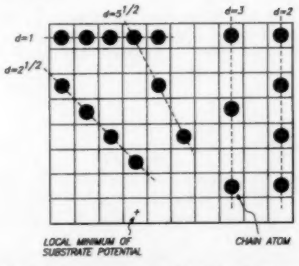
Toshishige Yamada, Mountain View, Calif.; Yoshihiro Takiguchi, Tokyo, Japan; Dehuan Huang, Palo Alto, and Yoshihisa Yamamoto, Stanford, both of Calif., assignors to Board of Regents of the Leland Stanford Junior University, Palo Alto, Calif., and Research Development Corp, Saitama, Japan

Continuation of application No. PCT/US95/14574, filed on Nov. 8, 1995, and a continuation-in-part of application No. 08/555,104, filed on Nov. 8, 1995, now abandoned, which is a continuation-in-part of application No. 08/336,852, filed on Nov. 8, 1994, now Pat. No. 5,981,316. This application Feb. 10, 1999, Appl. No. 247,884.

This patent is subject to a terminal disclaimer.

Int. Cl. H01L *21/70*

U.S. Cl. 438—128 **23 Claims**



11. A method of making an atomic chain circuit on a platform having crystallographic directions comprising the steps of:

placing atoms at locations according to the crystallographic directions on the platform to form chains of atoms electrically coupled to one another where each chain behaves as one of a conductor, semiconductor and insulator based at least in part on an atomic spacing between the atoms of each chain;

wherein said placing step is preceded with a step of removing atoms from the insulating layer at locations to prepare the platform for said placing step; and

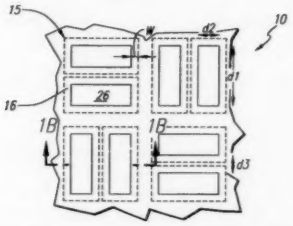
wherein said placing step includes placing each atom at locations where each atom has a bond with the substrate.

US 6,331,455 B1

POWER RECTIFIER DEVICE AND METHOD OF FABRICATING POWER RECTIFIER DEVICES

Vladimir Rodov, Redondo Beach; Wayne Y. W. Hsueh, San Jose; Paul Chang, Saratoga, and Michael Chern, Cupertino, all of Calif., assignors to Advanced Power Devices, Inc., San Jose, Calif.

Filed Apr. 1, 1999, Appl. No. 283,537
Int. Cl. H01L *21/332*
U.S. Cl. 438—138 **24 Claims**



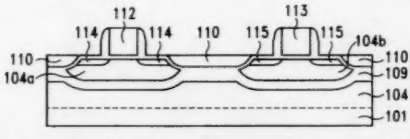
1. A method of fabricating a rectifier device, comprising the steps of:
providing a semiconductor substrate having a top and bottom surface;
forming a plurality of pedestals on said top surface of the semiconductor substrate;
forming a gate oxide on the substrate adjacent the pedestals;
forming a gate layer on top of said gate oxide;
forming a first spacer adjacent said pedestal sidewalls;
performing a first implant into said semiconductor substrate of a dopant of a first conductivity type, the implant being laterally defined by said first spacer;
removing the first spacer;
forming a second spacer adjacent said pedestal sidewalls, said second spacer being thicker than said first spacer;
performing a second implant into said semiconductor substrate of a dopant of a second conductivity type, said second implant being laterally defined by said second spacer;
wherein said first and second implants define a plurality of channel regions adjacent said pedestals and below said gate oxide; and
forming first and second electrical contact layers on said top and bottom surfaces, respectively, to provide a current flow path between said surfaces.

US 6,331,456 B1

FIPOS METHOD OF FORMING SOI CMOS STRUCTURE

Shye-Lin Wu, Hsinchu, Taiwan, assignor to Texas Instruments - Acer Incorporated, Hsinchu, Taiwan

Filed May 4, 1998, Appl. No. 72,289
Int. Cl. H01L *21/00*
U.S. Cl. 438—154 **20 Claims**



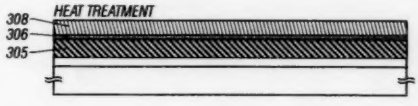
1. A method of forming a silicon-on-insulator structure, said method comprising the steps of:
forming a pad oxide layer on a substrate;
forming a silicon nitride layer on said pad oxide layer;
patterning said silicon nitride layer to form an active region;
forming a field oxide layer by using said silicon nitride layer as a mask;
removing said silicon nitride layer;
performing an ion implantation to form a buried dopant layer under said field oxide layer and said active region in said substrate, wherein a portion of said buried dopant layer under said active region is deeper than a portion under said field oxide layer;
removing completely said field oxide layer to expose said portion of said buried dopant layer under said field oxide layer and a portion of said substrate in said active region;
performing an oxidation to convert said buried dopant layer into an isolation layer and form an oxide film on said portion of said exposed substrate in said active regions;
depositing an oxide layer along a surface of said oxide film and said isolation layer; and
etching back said oxide layer to a planarized surface.

US 6,331,457 B1

METHOD FOR MANUFACTURING A SEMICONDUCTOR THIN FILM

Shunpei Yamazaki, Tokyo; Hisashi Ohtani, Kanagawa; Akiharu Miyanaga, Kanagawa, and Satoshi Teramoto, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory., Ltd. Co., Kanagawa-Ken, Japan

Division of application No. 08/789,193, filed on Jan. 24, 1997, now Pat. No. 6,048,758. This application Mar. 13, 2000, Appl. No. 524,327.
Int. Cl. H01L *21/20*
U.S. Cl. 438—166 **43 Claims**



1. A method for manufacturing a semiconductor thin film, comprising the steps of:
introducing metal elements into an amorphous silicon film;
crystallizing said amorphous silicon film to obtain a crystalline silicon film;
forming an amorphous silicon film containing impurities therein on said crystalline silicon film;
diffusing said metal elements in said amorphous silicon film containing the impurities therein; and
removing said amorphous silicon film containing the impurities therein.

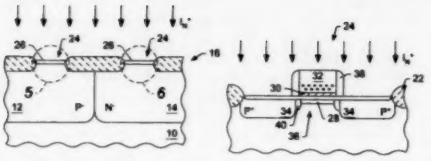
US 6,331,458 B1

ACTIVE REGION IMPLANT METHODOLOGY USING INDIUM TO ENHANCE SHORT CHANNEL PERFORMANCE OF A SURFACE CHANNEL PMOS DEVICE

Mohammed Anjum; Alan L. Stuber, and Ibrahim K. Burki, all of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of application No. 08/320,924, filed on Oct. 11, 1994, now abandoned. This application Sep. 22, 1995, Appl. No. 532,861.
Int. Cl. H01L *21/336*
U.S. Cl. 438—197 **7 Claims**

1. A method for fabricating an integrated circuit, comprising:
providing an opening to an active region of a semiconductor substrate upper surface;
constructing a conductive gate across a portion of said active region; and



implanting only indium ions through said opening into said active region, wherein said implanting forms p-type source and drain regions within said active region simultaneously with indium within said conductive gate.

US 6,331,459 B1

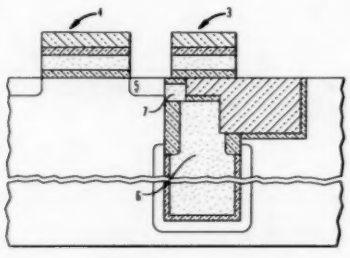
USE OF DUMMY POLY SPACERS AND DIVOT FILL TECHNIQUES FOR DT-ALIGNED PROCESSING AFTER STI FORMATION FOR ADVANCED DEEP TRENCH CAPACITOR DRAM

Ulrike Gruening, Wappingers Falls, N.Y., assignor to Infineon Technologies AG, Munich, Germany

Filed Feb. 18, 1999, Appl. No. 252,372

Int. Cl. H01L *21/8242*

U.S. Cl. 438—243 **36 Claims**



1. A method for forming a first region of a semiconductor substrate disposed beneath a surface of such substrate aligned with a second region, such second region having a portion thereof disposed in the semiconductor substrate beneath the surface of the semiconductor substrate, comprising:

forming the second region in the semiconductor substrate, such second region having a sidewall portion provided by the semiconductor substrate;

forming sacrificial material on the sidewall portion of the second region, such sacrificial material extending from the surface of the semiconductor substrate into the substrate beneath the surface of the semiconductor substrate;

forming covering material over the surface of the semiconductor substrate with a portion of the sacrificial material projecting through the covering material to expose such portion of the sacrificial material; and

subjecting the covering material and the exposed portion of the sacrificial material to an etch to selectively remove the sacrificial material from the sidewall portion while leaving the covering material, such removed sacrificial material exposing the sidewall portion of the second region;

forming the first region in the semiconductor substrate using the exposed portion of the second region as marker indicating position of the sidewall of the second region.

US 6,331,460 B1

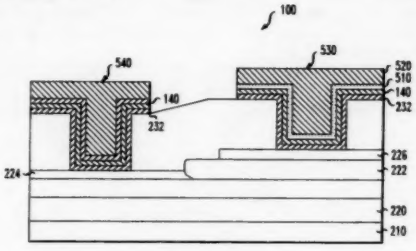
METHOD OF FABRICATING A MOM CAPACITOR HAVING A METAL SILICIDE BARRIER

Isik C. Kizilyalli; Sailesh M. Merchant, and Joseph R. Radosevich, all of Orlando, Fla., assignors to Agere Systems Guardian Corp., Orlando, Fla.

Filed Nov. 17, 1999, Appl. No. 441,676

Int. Cl. H01L *21/8242*

U.S. Cl. 438—243 **16 Claims**



1. A method of forming a metal oxide metal (MOM) capacitor on a semiconductor wafer, comprising:

forming a dielectric layer over a semiconductor wafer;

forming a first metal electrode layer within a contact opening in the dielectric layer;

forming a metal silicide layer on the first metal electrode layer and within the contact opening;

forming an oxide layer on the metal silicide layer; and

forming a second metal electrode layer on the oxide layer.

US 6,331,461 B1

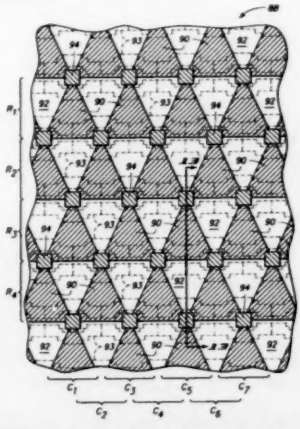
SEMICONDUCTOR PROCESSING METHODS OF FORMING DEVICES ON A SUBSTRATE, FORMING DEVICE ARRAYS ON A SUBSTRATE, FORMING CONDUCTIVE LINES ON A SUBSTRATE, AND FORMING CAPACITOR ARRAYS ON A SUBSTRATE, AND INTEGRATED CIRCUITRY

Werner Juengling, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Division of application No. 09/036,701, filed on Mar. 6, 1998, which is a division of application No. 08/742,895, filed on Nov. 1, 1996, now Pat. No. 5,998,256. This application Oct. 21, 1999, Appl. No. 422,825.

Int. Cl. H01L *21/8242*

U.S. Cl. 438—253 **6 Claims**



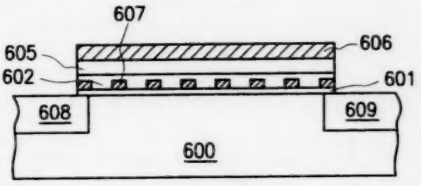
1. A DRAM capacitor forming method comprising the steps of:

forming a plurality of patterned outlines over a semiconductive substrate to define individual areas for a plurality of capacitors to be formed;

partitioning said individual areas from one another by a non-conducting partition;

forming capacitors in at least some of the respective partitioned areas, the respective capacitors being separated from immediately adjacent capacitors by a distance substantially no greater than the width of the partition therebetween; and

wherein individual defined areas, when viewed from a point above the substrate, approximate diamond shapes.



US 6,331,462 B1

MANUFACTURING METHOD OF A SEMICONDUCTOR DEVICE FOR DESIRED CIRCUIT PATTERNS

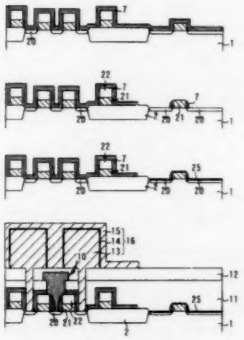
Tatsuo Kasaoka; Atsushi Hachisuka, and Shinya Soeda, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1999, Appl. No. 453,807

Claims priority, application Japan, Jun. 30, 1999, 11-186526

Int. Cl. H01L *21/8242*

U.S. Cl. 438—253 **13 Claims**



1. A manufacturing method of a semiconductor device for forming desired circuit patterns on a semiconductor substrate, regions of said semiconductor substrate being divided into a high-density region principally including a high-density pattern and a low-density region principally including a low-density pattern, said manufacturing method of a semiconductor device comprising the steps of:

forming a conductive layer on said semiconductor substrate before pattern transfer;

transferring the high-density pattern to said high-density region by photolithography;

transferring the low-density pattern to said low-density region by photolithography separate from said step of transferring the high-density pattern to said high-density region; and

forming on said semiconductor substrate the patterns transferred to said high-density region and said low-density region, wherein both the high density pattern and the low-density pattern are transferred to the conductive layer.

US 6,331,463 B1

METHOD FOR MANUFACTURING LOW POWER HIGH EFFICIENCY NON-VOLATILE ERASABLE PROGRAMMABLE MEMORY CELL STRUCTURE

Shen-Li Chen, Taichung, Taiwan, assignor to United Microelectronics Corp., Taiwan

Filed Jan. 18, 1999, Appl. No. 233,375

Int. Cl. H01L *21/336*

U.S. Cl. 438—257 **26 Claims**

1. A method for forming low power, high efficiency, non-volatile, erasable programmable memory cell structure, comprising the steps of:

providing a silicon substrate;

forming a thin thermal oxide layer over the substrate;

forming a silicon nitride layer over the thin thermal oxide layer;

implanting silicon ions into an interface between the thin thermal oxide layer and the silicon nitride layer;

forming a dielectric layer over the silicon nitride layer;

forming a second polysilicon gate layer over the dielectric layer, and then etching the second polysilicon gate layer, the dielectric layer, the silicon nitride layer and the thin thermal oxide layer to form a pattern; and

performing a second ion implantation to form a source region and a drain region in the substrate,

wherein the implanted silicon ions in the silicon nitride layer naturally form a plurality of floating-gate pieces due to a thermal effect in the subsequent steps with operation temperatures.

US 6,331,464 B1

METHOD OF FABRICATING A FLASH MEMORY

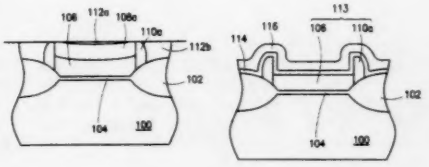
Liann-Chern Liou, Taipei Hsien, and Guang-Sheng Lai, Taichung, both of Taiwan, assignors to United Microelectronics Corp., Hsinchu, Taiwan

Filed Oct. 2, 2000, Appl. No. 677,166

Claims priority, application Taiwan, Sep. 8, 2000, 89118399 A

Int. Cl. H01L *21/336*

U.S. Cl. 438—257 **14 Claims**



1. A method of fabricating a flash memory, comprising:

providing a substrate having a tunnel oxide layer, a first conductive layer, and a first material layer thereon;

forming a conductive spacer on sidewalls of the first conductive layer and the first material layer;

forming a second material layer on the substrate and on the first material layer;

removing a part of the second material layer and a top edge of the conductive spacer to expose a portion of the conductive spacer;

removing a remaining portion of the second material layer and the conductive spacer and first material layer to expose the first conductive layer and the conductive spacer, which together form a floating gate;

forming a dielectric film layer on the substrate; and

forming a second conductive layer above the dielectric film layer.

US 6,331,465 B1

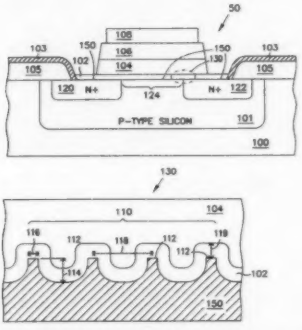
ALTERNATE METHOD AND STRUCTURE FOR IMPROVED FLOATING GATE TUNNELING DEVICES USING TEXTURED SURFACE

Leonard Forbes, Corvallis, Oreg., and Joseph E. Geusic, Berkeley Heights, N.J., assignors to Micron Technology, Inc., Boise, Id.

Division of application No. 09/087,473, filed on May 29, 1998, now Pat. No. 6,025,627. This application Feb. 15, 2000, Appl. No. 504,405.

Int. Cl. H01L *21/8247*

U.S. Cl. 438—260 **32 Claims**



1. A method for fabricating a non volatile memory cell structure, comprising:

forming a textured surface on a substrate, wherein forming the textured surface includes forming an array of microtips, each microtip having a top surface, and wherein forming the array of microtips includes forming the microtips to have an average density of $10^{12}/cm^2$;

forming a tunnel oxide layer on the textured surface, wherein forming the tunnel oxide layer comprises depositing the tunnel oxide layer on the substrate using atomic layer epitaxy (ALE);

forming a first gate on the tunnel oxide layer;

forming an insulator layer on the first gate; and

forming a second gate on the insulator layer.

US 6,331,466 B1

INSULATED GATE SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

Hideki Takahashi; Hidenori Nishihara, both of Fukuoka; Masana Harada, Nishinomiya, and Tadaharu Minato, Kobe, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of application No. 08/338,599, filed on Feb. 14, 1995. This application May 2, 2000, Appl. No. 563,206.

Claims priority, application Japan, Feb. 21, 1994, 6-022459(P)

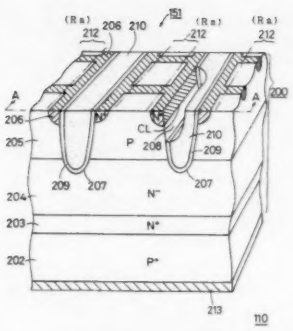
Int. Cl. H01L *21/336;29/74;31/111*

U.S. Cl. 438—268 **6 Claims**

1. A method of manufacturing an insulated gate type semiconductor device in which a plurality of insulated gate type semiconductor elements having trench gate are arranged substantially in a stripe form in a semiconductor base body, comprising the steps of:

(a) preparing the semiconductor base body defining an upper main surface and a lower main surface and having a first semiconductor layer of a first conductivity type exposed on the upper main surface;

(b) forming a second semiconductor layer of a second conductivity type exposed the upper main surface of said semiconductor base body in an upper surface portion of said first semiconductor layer by introducing impurity of the second conductivity type in the upper main surface of said semiconductor base body;



(c) selectively introducing impurity of the first conductivity type in the upper main surface of said semiconductor base body to selectively form a third semiconductor layer of the first conductivity type exposed on the upper main surface in a lattice-like form in an upper surface portion of said second semiconductor layer;

(d) selectively carrying out etching from the upper main surface of said semiconductor base body to form a trench which opens in said upper main surface, reaches said first semiconductor layer, and includes at least as a part thereof a plurality of trenches arranged substantially in a stripe form, each of said plurality of trenches opens along and inside a portion of the lattice-like exposed surface of said third semiconductor layer extending in a stripe form;

(e) forming a first insulating film covering an inner wall of said trench and the upper main surface of said semiconductor base body;

(f) burying a gate electrode in said trench covered with said first insulating film;

(g) forming a second insulating film on said first insulating film and said gate electrode;

(h) selectively applying etching to said second insulating film to selectively remove said second insulating film substantially in a zonal form interposed between adjacent said strip-like trenches, separated from the trenches and extending along the trenches;

(i) forming a first conductor to cover said second insulating film and a portion from where it is removed; and

(j) forming a second conductor on the lower main surface of said semiconductor base body.

US 6,331,467 B1

METHOD OF MANUFACTURING A TRENCH GATE FIELD EFFECT SEMICONDUCTOR DEVICE

Adam R. Brown, Bramhall, United Kingdom; Raymond J. E. Hueting, Helmond, and Godefridus A. M. Hurkx, Best, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

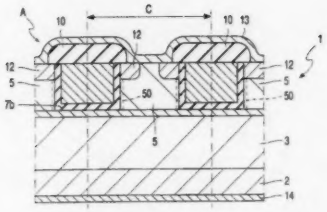
Filed Mar. 29, 2000, Appl. No. 538,467

Claims priority, application United Kingdom, Mar. 30, 1999, 9907184

Int. Cl. H01L *21/336*

U.S. Cl. 438—270 **12 Claims**

1. A method of manufacturing a semiconductor device comprising a trench gate field effect device, which method comprises: providing a semiconductor body having first and second major surfaces with a first semiconductor region of one conductivity type separated from the first major surface by a second semiconductor region of the opposite conductivity type; etching a trench through the second semiconductor region; providing a gate within the trench; forming adjacent the trench a source region separated from the first region by the second region with a conduction channel area of the second region adjacent the trench providing a conduction path between the source and first regions which is controllable



by the gate, characterised by providing an etch stop layer in the region of the pn junction between the first and second regions; and etching said trench using an etching process which enables the etching process to be stopped at the etch stop layer.

US 6,331,468 B1

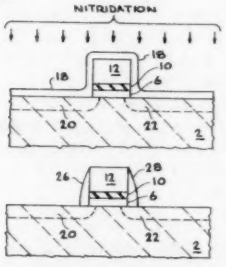
FORMATION OF INTEGRATED CIRCUIT STRUCTURE USING ONE OR MORE SILICON LAYERS FOR IMPLANTATION AND OUT-DIFFUSION IN FORMATION OF DEFECT-FREE SOURCE/DRAIN REGIONS AND ALSO FOR SUBSEQUENT FORMATION OF SILICON NITRIDE SPACERS

Sheldon Aronowitz, San Jose; Helmut Puchner, Santa Clara; Ravindra A. Kapre, San Jose, and James P. Kimball, San Jose, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed May 11, 1998, Appl. No. 76,399

Int. Cl. H01L *21/336*

U.S. Cl. 438—287 **18 Claims**



1. A process for forming an integrated circuit structure on a semiconductor substrate which comprises:

a) forming a gate oxide layer over a single crystal semiconductor substrate;

b) forming a dopant-implant barrier layer containing nitrogen and silicon over said single crystal semiconductor substrate;

c) forming a polysilicon gate electrode over said barrier layer;

d) removing exposed portions of said barrier layer remaining after formation of said gate electrode thereon;

e) forming an amorphous silicon layer over said integrated circuit structure;

f) implanting said amorphous silicon layer with a first dopant capable of forming source/drain regions in the underlying semiconductor substrate;

g) annealing said amorphous silicon layer:

1) to crystallize said amorphous silicon layer to form a polysilicon layer;

2) to diffuse said implanted dopant from said silicon layer into said substrate to form said source/drain regions in said substrate; and

3) to diffuse said dopant into said polysilicon gate electrode;

h) then nitridating said polysilicon layer to convert said polysilicon layer into a silicon nitride layer; and

i) then anisotropically etching said silicon nitride layer to form silicon nitride spacers on the sidewalls of said polysilicon gate electrode to electrically insulate said gate electrode from said source/drain regions in said substrate.

US 6,331,469 B1

TRENCH ISOLATION STRUCTURE, SEMICONDUCTOR DEVICE HAVING THE SAME, AND TRENCH ISOLATION METHOD

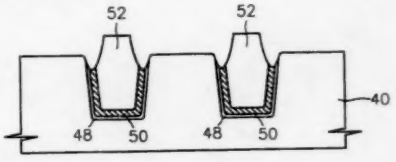
Tai-su Park; Moon-han Park; Kyung-won Park, and Han-sin Lee, all of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Oct. 10, 2000, Appl. No. 684,822

Claims priority, application Rep. of Korea, Oct. 12, 1999, 99-43989

Int. Cl. H01L *21/76*

U.S. Cl. 438—296 **20 Claims**



1. A trench isolation method comprising:

forming a trench in non-active regions of a semiconductor substrate;

forming an inner wall oxide film on the inner wall of the trench;

forming a silicon nitride liner on the surface of the inner wall oxide film;

filling the trench with a dielectric film; and etching part of the silicon nitride liner so that the top ends of the silicon nitride liner are recessed from the surface of the semiconductor substrate.

US 6,331,470 B1

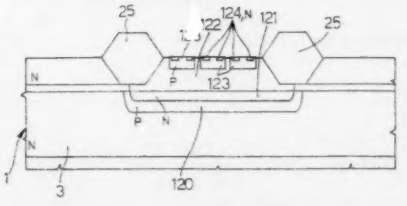
PROCESS FOR MANUFACTURING A SEMICONDUCTOR MATERIAL WAFER HAVING POWER REGIONS DIELECTRICALLY INSULATED FROM CIRCUITRY REGIONS

Delfo Sanfilippo, Catania, and Salvatore Leonardi, Aci Sant'Antonio, both of Italy, assignors to STMicroelectronics S.r.l., Agrate Brianza, Italy

Filed May 26, 2000, Appl. No. 580,364

Int. Cl. H01L *21/331*

U.S. Cl. 438—311 **22 Claims**



1. A process for manufacturing a wafer of semiconductor material, including a power region and a circuitry region insulated from each other by dielectric material, the process comprising:

forming a starting wafer having a bottom layer, a top layer, both of semiconductor material, and a buried layer of dielectric material, arranged between said bottom layer and said top layer;

removing portions of said top layer and forming cavities extending in depth as far as said buried layer, comprising forming sacrificial regions by oxidizing said top layer; and removing said sacrificial regions;

removing portions of said buried layer beneath said cavities;

filling said cavities with filling regions of semiconductor material; and

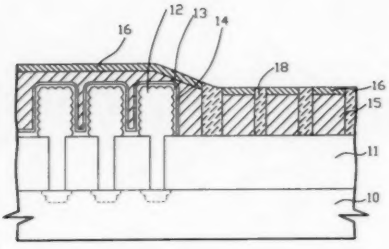
forming lateral insulation regions between said filling regions and circuitry regions in said top layer.

US 6,331,471 B1

METHOD FOR IMPROVING PEELING ISSUES DURING FABRICATION OF INTEGRATED CIRCUITS

Tzung-Han Lee, and Wayne Tan, both of Taipei, Taiwan, assignors to United Microelectronics Corp., Taiwan

Filed Sep. 18, 1999, Appl. No. 394,559
Int. Cl. H01L *21/20*
U.S. Cl. 438—396 **12 Claims**



1. A method for forming integrated circuits, comprising:
providing a substrate including a first part and a second part;
forming a first dielectric layer (**11**) on said first part and on said second part of said substrate;
defining a first conductor layer (**12**), serving as lower electrode of the capacitor, on said first dielectric layer (**11**) on said first part;
forming a second dielectric layer (**13**) on said first conductor layer (**12**);
forming a second conductor layer (**14**), serving as upper electrode of the capacitor, on said second dielectric layer (**12**);
forming a third dielectric layer (**15**) on said second conductor layer (**14**) and on said first dielectric layer (**11**) on said second part;
forming a fourth dielectric layer (**16**) on said third dielectric layer (**15**);
forming a photoresist, wherein a pattern region is formed over said second part, on said fourth dielectric layer (**16**);
etching said third and fourth dielectric layers (**15**)(**16**) over said second part;
stripping said photoresist;
forming a fifth dielectric layer (**18**) on said fourth dielectric layer (**16**) over both said first and said second parts; and
removing said fifth dielectric layer (**18**) till said fourth dielectric layer (**16**) being exposed.

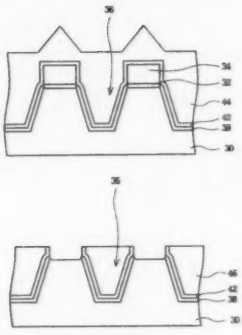
US 6,331,472 B1

METHOD FOR FORMING SHALLOW TRENCH ISOLATION

Wan-Yi Liu, Kaohsiung, and Pei-Ren Jeng, Hsinchu, both of Taiwan, assignors to Macronix International Co., Ltd., Taiwan

Filed Nov. 29, 2000, Appl. No. 725,065
Claims priority, application Taiwan, Oct. 11, 2000, 89121252
Int. Cl. H01L *21/76*
U.S. Cl. 438—424 **16 Claims**

1. A method for forming shallow trench isolation, comprising:
forming a pad oxide layer on a substrate;
forming a mask layer on said pad oxide layer;
forming openings on said mask layer and said pad oxide layer such that regions of said substrate are exposed;
etching said exposed regions for forming trenches on said substrate;
forming a lining oxide layer on the sidewalls of said trenches;
forming a silicon-rich oxide layer on said lining oxide layer and said mask layer respectively;



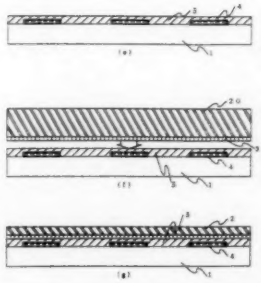
filling said trench by forming a silicon oxide layer on said silicon-rich oxide layer;
removing the excess portion of said silicon oxide layer and said silicon-rich layer over said mask layer such that said mask layer is exposed;
removing said mask layer; and
removing said pad oxide layer by using hydrofluoric acid (HF).

US 6,331,473 B1

SOI SUBSTRATE, METHOD FOR MAKING THE SAME, SEMICONDUCTIVE DEVICE AND LIQUID CRYSTAL PANEL USING THE SAME

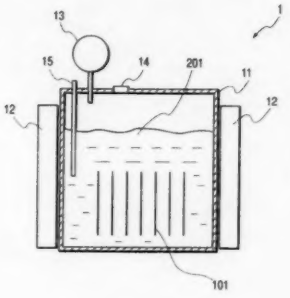
Yukiya Hirabayashi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Division of application No. 09/221,999, filed on Dec. 29, 1998. This application Apr. 28, 2000, Appl. No. 559,822.
Int. Cl. H01L *21/30;21/46;21/00*
U.S. Cl. 438—455 **6 Claims**



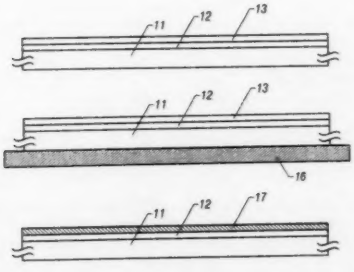
1. A method of making an SOI substrate comprising:
providing a transparent supporting substrate,
forming a light shielding layer above one surface of the supporting substrate,
patterning the light shielding layer so as to cover at least a channel region of a transistor device,
forming an insulating layer above the light shielding layer,
planarizing a surface of the insulating layer,
bonding a single-crystal silicon layer to the planarized surface of the insulating layer, and
patterning the single-crystal silicon layer.

US 6,331,474 B1
DEFECT COMPENSATION METHOD FOR SEMICONDUCTOR ELEMENT
Ryo Hayashi, and Keishi Saito, both of Nara, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 1, 2000, Appl. No. 630,525
Claims priority, application Japan, Aug. 3, 1999, 11-220547
Int. Cl. H01L *21/322*
U.S. Cl. 438—476 22 Claims



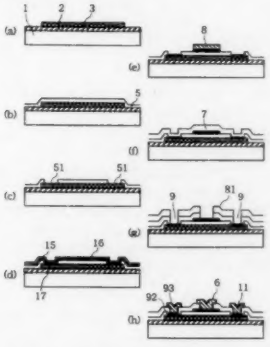
1. A defect compensation method for a semiconductor element to compensate defect of the semiconductor element, wherein hot water is contacted with semiconductor element to make the defect compensation of the semiconductor element.

US 6,331,475 B1
METHOD AND MANUFACTURING SEMICONDUCTOR DEVICE
Shunpei Yamazaki, Tokyo; Satoshi Teramoto, Kanagawa; Jun Koyama, Kanagawa, and Akiharu Miyanaga, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-Ken, Japan
Filed Oct. 23, 1998, Appl. No. 190,408
Claims priority, application Japan, Jan. 12, 1995, 7-199079; Jun. 2, 1995, 7-159976; Jun. 2, 1995, 7-160002; Dec. 15, 1995, 7-347821
Int. Cl. H01L *21/20;21/36*
U.S. Cl. 438—479 30 Claims



1. A method for producing a semiconductor device comprising the steps of:
forming a semiconductor film comprising silicon on an insulating surface over a substrate;
disposing in contact with the semiconductor film a catalyst material that promotes crystallization of silicon; and
crystallizing the semiconductor film by heating the semiconductor film and the catalyst material at 800° C. to 1100° C.

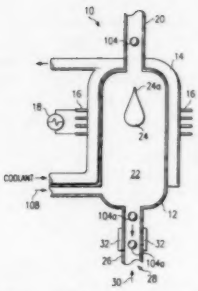
US 6,331,476 B1
THIN FILM TRANSISTOR AND PRODUCING METHOD THEREOF
Tetsuo Kawakita; Keizaburo Kuramasu, both of Kyotanabe, and Shigeo Ikuda, Hirakata, all of Japan, assignors to Mausushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 21, 1999, Appl. No. 316,017
Claims priority, application Japan, May 26, 1998, 10-143892; Jan. 28, 1999, 11-019535
Int. Cl. H01L *21/20;21/36;21/28;21/44*
U.S. Cl. 438—486 6 Claims



4. A method of producing a thin film transistor comprising the steps of:
forming a silicon film in a predetermined region on a substrate,
forming a gate insulating film on an entire area of the silicon film,
forming a fist metal film by removing a portion of the gate insulating film located in each position where a source electrode and a drain electrode are to be formed and thereafter forming a first metal film on an entire area of the substrate,
forming a silicide layer in a region where the first metal film is directly in contact with the silicon film, by reacting the first metal film with the silicon film with heat,
forming an interlayer dielectric layer, by firstly removing the first metal film, thereafter forming, in a position on the silicon film where a gate electrode is to be formed, a second metal film composed of a metal resistant to an etching gas for etching the interlayer dielectric layer, and thereafter forming the interlayer dielectric layer on the entire area of the substrate,
forming a contact hole by dry etching the interlayer dielectric layer utilizing the silicide layer and the second metal film as an etch stopper, so as to provide the contact hole in each of the positions corresponding to the gate electrode, the source electrode, and the gate electrode, and
forming a third metal film on the entire area of the substrate and thereafter removing an excessive portion of the third metal film to form the gate electrode, the source electrode, and the drain electrode or an undermost layer thereof.

US 6,331,477 B1
DOPING OF SPHERICAL SEMICONDUCTORS DURING NON-CONTACT PROCESSING IN THE LIQUID STATE
Evangellos Vekris; Nainesh J. Patel, and Murali Hanabe, all of Plano, Tex., assignors to Ball Semiconductor, Inc., Allen, Tex.
Filed Jan. 24, 2000, Appl. No. 489,782
Int. Cl. H01L *21/22*
U.S. Cl. 438—542 3 Claims

1. A method of doping a three dimensional substrate in a non-contact environment, the method comprising the sequential steps of:
receiving a three dimensional substrate;
melting the three dimensional substrate to a liquid state;



doping the three dimensional substrate with a dopant to create a doped three dimensional substrate;

recrystallizing the doped three dimensional substrate to create a doped three dimensional single crystal;

wherein the three dimensional single crystal is a spherical shaped semiconductor; and

wherein the dopant is a dopant plasma produced by either passing a solid dopant mixed with an inert gas through an Inductively Coupled Plasma (ICP) torch or by lining an ICP torch with a solid dopant.

US 6,331,478 B1

METHODS FOR MANUFACTURING SEMICONDUCTOR DEVICES HAVING CHAMFERED METAL SILICIDE LAYERS

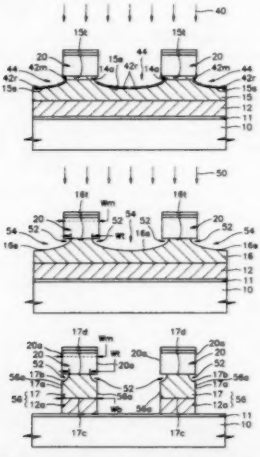
Keum-joo Lee, Incheon; In-seak Hwang; Yong-sun Ko, both of Suwon, and Chang-Iyoung Song, Kyungki-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Oct. 9, 2000, Appl. No. 685,456

Claims priority, application Rep. of Korea, Oct. 7, 1999, 99-43209

Int. Cl. H01L *21/4763*

U.S. Cl. 438—592 **17 Claims**



1. A method for manufacturing a semiconductor device, comprising:

forming a mask pattern on a metal silicide layer to expose a portion of the metal silicide layer;

isotropically etching the exposed portion of the metal silicide layer in a first etchant to form a metal silicide layer with a shallow groove and defects due to silicon remaining on the surface of the metal silicide layer; and

isotropically etching the exposed portion of the metal silicide layer with a shallow groove in a second etchant to remove the defects due to the silicon remaining on the surface of the metal silicide layer and to form a metal silicide layer with a smooth surface.

US 6,331,479 B1

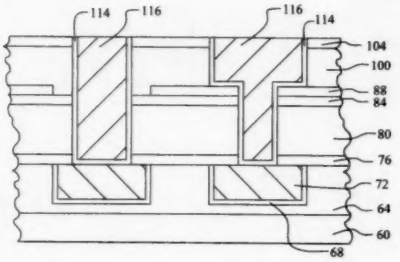
METHOD TO PREVENT DEGRADATION OF LOW DIELECTRIC CONSTANT MATERIAL IN COPPER DAMASCENE INTERCONNECTS

Jianxun Li; Mei Sheng Zhou; Yi Xu, and Simon Chooi, all of Singapore, Singapore, assignors to Chartered Semiconductor Manufacturing Ltd., Singapore, Singapore

Filed Sep. 20, 1999, Appl. No. 398,294

Int. Cl. H01L *21/4763*

U.S. Cl. 438—618 **23 Claims**



1. A method to form trenches in the manufacture of an integrated circuit device comprising:

providing a semiconductor substrate;

depositing a first dielectric layer overlying said semiconductor substrate;

depositing a first etch stopping layer overlying said first dielectric layer;

depositing a second etch stopping layer overlying said first etch stopping layer wherein said first etch stopping layer has a lower etch rate than said second etch stopping layer;

depositing a photoresist layer overlying said second etch stopping layer;

patterning said photoresist layer to define openings for planned trenches;

etching through said second etch stopping layer to form a hard mask for said planned trenches;

stripping away said photoresist layer by ashing where said first etch stopping layer protects said first dielectric layer from damage due to the presence of oxygen radicals;

thereafter etching said first etch stopping layer to complete said trenches; and

completing said integrated circuit device.

US 6,331,480 B1

METHOD TO IMPROVE ADHESION BETWEEN AN OVERLYING OXIDE HARD MASK AND AN UNDERLYING LOW DIELECTRIC CONSTANT MATERIAL

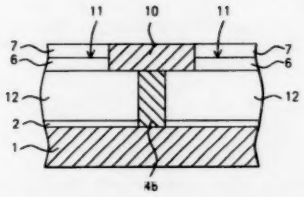
Chia-Shiung Tsai, Hsin-Chu; Yao-Yi Cheng, Taipei, and Hun-Jan Tao, Hsin-Chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsin-Chu, Taiwan

Filed Feb. 18, 1999, Appl. No. 252,469

Int. Cl. H01L *21/4763*

U.S. Cl. 438—624 **6 Claims**

1. A method of fabricating a metal interconnect structure, on a semiconductor substrate, using a silicon oxide, damascene mask pattern, formed on underlying thick low K—insulator, composite layer, and featuring a UV treatment performed on said thick low K



layer, prior to deposition of the said silicon oxide layer, used for the damascene mask pattern, with said UV treatment used to improve the adhesion between said silicon oxide layer, and said thick low K layer, comprising the steps of:

forming said thick low K layer, and an underlying insulator layer, on an underlying, first metal interconnect structure;

forming a via hole in said thick low K layer, and in said underlying insulator layer, exposing a portion of the top surface, of said first metal interconnect structure;

forming a metal plug structure, in said via hole;

performing said treatment, comprised of UV exposure of the top surface of said thick low k layer, creating a roughened top surface for said thick low K layer;

depositing a second insulator layer, on said roughened top surface of said thick low K layer;

depositing a silicon oxide layer on said second insulator layer;

using a photoresist shape, with a first opening, as a mask, to form said silicon oxide, damascene mask pattern, via removal of regions of said silicon oxide layer, exposed in said first opening in said photoresist shape, and with a second opening, in said silicon oxide, damascene mask pattern, exposing a portion of the top surface of said second insulator layer;

removing said portion, of said second insulator layer, exposed in said second opening, in said silicon oxide, damascene mask pattern, exposing the top surface of said metal plug structure;

removing said photoresist shape, from the top surface of said silicon oxide, damascene mask pattern; and

forming a second metal interconnect structure, in said second opening, in said silicon oxide, damascene mask pattern.

US 6,331,481 B1

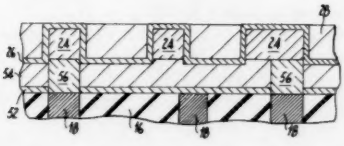
DAMASCENE ETCHBACK FOR LOW ϵ DIELECTRIC

Anthony K. Stamper, Williston, Vt., and Vincent J. McGahay, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 4, 1999, Appl. No. 225,477

Int. Cl. H01L *21/441*

U.S. Cl. 438—626 **47 Claims**



47. A method of providing a low dielectric constant material to a damascene structure containing an intermetal dielectric having planarized in-laid wiring comprising the steps of:

(a) partially etching back an intermetal dielectric of a damascene structure having planarized in-laid wiring, said intermetal dielectric is formed on an etch stop layer that includes openings in which said planarized in-laid wiring is in electrical contact with wiring regions of a lower wiring level, so as to expose a portion of said in-laid wiring, wherein said etching back is stopped before reaching said etch stop layer;

(b) forming a polish stop layer over said partially etched back intermetal dielectric;

(c) forming a dielectric material having a dielectric constant lower than SiO_2 and the intermetal dielectric over the polish stop layer; and

(d) planarizing the structure providing in step (c) so as to leave some of said dielectric material that is above the polish stop layer in said structure.

US 6,331,482 B1

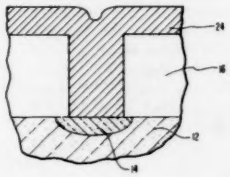
METHOD OF VLSI CONTACT, TRENCH, AND VIA FILLING USING A GERMANIUM UNDERLAYER WITH METALLIZATION

Jeffrey Honeycutt, and Sujit Sharan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jun. 26, 1996, Appl. No. 673,623

Int. Cl. H01L *21/441*

U.S. Cl. 438—642 **32 Claims**



1. A method of forming a contact structure, the method comprising:

forming n opening extending through an insulating layer to an underlying portion of a layer of silicon;

forming a film of germanium in the opening and in contact with the underlying portion of the layer of silicon to remove a layer of native oxide formed on the underlying portion of the layer of silicon within the opening; and

forming a metallization material in the opening, and in contact with the film of germanium, wherein the metallization material comprises aluminum, and said forming said metallization material in the opening and in contact with the film of germanium is performed at a temperature in the range from about 200°C to about 350°C.

US 6,331,483 B1

METHOD OF FILM-FORMING OF TUNGSTEN

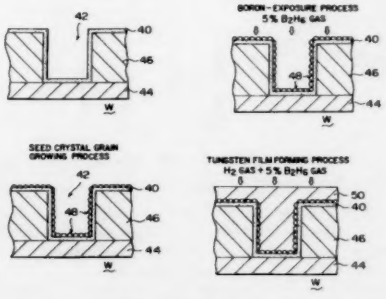
Hotaka Ishizuka, Kofu, and Mitsuhiro Tachibana, Yamanashiken, both of Japan, assignors to Tokyo Electron Limited, Tokyo-To, Japan

Filed Dec. 14, 1999, Appl. No. 459,974

Claims priority, application Japan, Dec. 18, 1998, 10-375980; Dec. 18, 1998, 10-375981

Int. Cl. H01L *21/4763*

U.S. Cl. 438—648 **9 Claims**



1. A method of forming a tungsten film on a surface of an object to be processed by a vacuum processing system, said method comprising the steps of:

growing tungsten seed crystal grains on the surface of the object to be processed in an atmosphere of a film forming gas containing tungsten atoms;

exposing the object to be processed to an atmosphere of a boron-containing gas for a short time; and

forming a tungsten film by making the tungsten seed crystal grains grow in an atmosphere of a gas containing a film forming gas containing tungsten atoms, a hydrogen gas and a hydrogen-diluted boron-containing gas.

US 6,331,484 B1

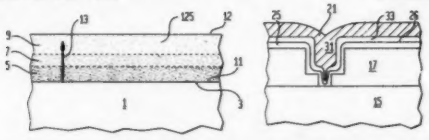
TITANIUM-TANTALUM BARRIER LAYER FILM AND METHOD FOR FORMING THE SAME

Siddhartha Bhowmik; Sailesh Mansinh Merchant; Minseok Oh; Pradip Kumar Roy, and Sidhartha Sen, all of Orlando, Fla., assignors to Lucent Technologies, Inc., Muray Hill, N.J.

Provisional application No. 60/126,681, filed on Mar. 29, 1999, Provisional application No. 60/135,565, filed on May 24, 1999. This application Mar. 6, 2000, Appl. No. 519,193.

Int. Cl. H01L *21/4763*

U.S. Cl. 438—648 **41 Claims**



1. A process for depositing a film onto a substrate, comprising the steps of:

a) providing a substrate having a substrate surface;

b) depositing a titanium-tantalum film over the substrate surface, the film having a gradient of titanium concentration substantially throughout the film, the titanium concentration being maximized at a section of the film nearest the substrate surface, and decreasing along a direction extending perpendicularly away from the substrate surface.

US 6,331,485 B1

METHOD OF PRODUCING SEMICONDUCTOR DEVICE

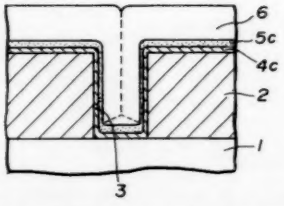
Takaaki Miyamoto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of application No. 08/280,450, filed on Jul. 26, 1994, now abandoned. This application Feb. 26, 1996, Appl. No. 606,975.

Claims priority, application Japan, Jul. 30, 1993, 5-190120

Int. Cl. H01L *21/44*

U.S. Cl. 438—653 **8 Claims**



1. A method for filling a contact hole in a wafer having an insulating film deposited on a substrate and defining a contact hole having walls formed in said insulating film and being in contact with said substrate, comprising the steps of:

forming a layer of a metal element selected from the group consisting of Ti, Zr, and Hf by an ECR plasma CVD method by reducing a gas of a halogenated product of the metal element with H_2 at an effective flow ratio of the former gas to H_2 of approximately 0.8, thus conformally covering an inner wall surface of the contact hole without forming cracks or defects at corners of a bottom of said contact hole;

forming a barrier layer; and

filling the contact hole with an electrically conductive material.

US 6,331,486 B1

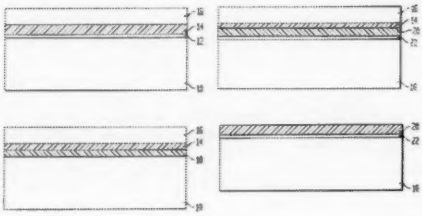
METHOD AND STRUCTURE FOR REDUCTION OF CONTACT RESISTANCE OF METAL SILICIDES USING A METAL-GERMANIUM ALLOY

Cyril Cabral, Jr., Ossining; Roy Arthur Carruthers, Stormville; James McKell Edwin Harper, Yorktown Heights; Christian Lavoie; Ronnen Andrew Roy, both of Ossining, and Yun Yu Wang, Poughquag, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 2000, Appl. No. 519,897

Int. Cl. H01L *2/44*

U.S. Cl. 438—682 **22 Claims**



1. A method for reducing the contact resistance of metal silicide contacts comprising the steps of:

(a) forming a metal germanium alloy layer over a silicon-containing substrate, wherein said metal is Co, Ti, Ni or mixtures thereof;

(b) annealing said metal germanium alloy layer at a temperature sufficient to convert at least a portion of said metal germanium alloy layer into a metal silicide layer that is substantially non-etchable compared to the unreacted metal germanium alloy layer, while forming a Si—Ge interlayer between said silicon-containing substrate and said substantially non-etchable metal silicide layer;

(c) removing any remaining metal germanium alloy layer, with the proviso that when Ti or Co are employed a second annealing step follows step (c) that is capable of converting the substantially non-etchable Ti or Co silicide phase into Co disilicide or C54 phase of $TiSi_2$.

US 6,331,487 B2

REMOVAL OF POLISHING RESIDUE FROM SUBSTRATE USING SUPERCRITICAL FLUID PROCESS

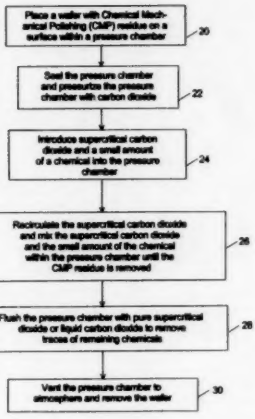
Robert Koch, Fremont, Calif., assignor to Tokyo Electron Limited, Tokyo, Japan

Continuation of application No. 09/407,628, filed on Sep. 28, 1999, Provisional application No. 60/101,988, filed on Sep. 28, 1998. This application Feb. 27, 2001, Appl. No. 796,300.

Int. Cl. H01L *21/00;* **B44C** *1/22*

U.S. Cl. 438—692 **3 Claims**

1. A method of removing a polishing residue from a surface of a substrate comprising the step of maintaining a supercritical fluid in contact with the substrate until the polishing residue is removed


Place a wafer with Chemical Mechanical Polishing (CMP) residue on a surface within a pressure chamber
20
Seal the pressure chamber and pressurize the pressure chamber with carbon dioxide
22
Introduce supercritical carbon dioxide and a small amount of a chemical into the pressure chamber
24
Recirculate the supercritical carbon dioxide and mix the supercritical carbon dioxide and the small amount of the chemical within the pressure chamber until the CMP residue is removed
26
Flush the pressure chamber with pure supercritical dioxide or liquid carbon dioxide to remove traces of remaining chemicals
28
Vent the pressure chamber to atmosphere and remove the wafer
30

from the substrate.

US 6,331,488 B1

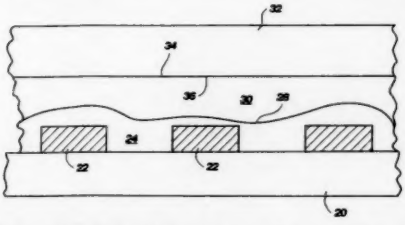
PLANARIZATION PROCESS FOR SEMICONDUCTOR SUBSTRATES

Trung T. Doan; Guy T. Blalock; Mark Durcan, and Scott G. Meikle, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed May 23, 1997, Appl. No. 862,752

Int. Cl. H01L *21/302;* **B05D** *3/00*

U.S. Cl. 438—698 **54 Claims**



1. A method for planarizing a non-planar film surface of a wafer, said method comprising the steps of:

providing a wafer;

coating said surface of said wafer with a deformable material;

contacting the deformable material with an object;

forming a substantially flat planar surface on said non-planar film surface of said wafer;

performing one of group of curing, hardening, and solidifying the deformable material while the object is contacting the deformable material; and

planarizing said wafer using a chemical mechanical planarization process.

US 6,331,489 B2

SEMICONDUCTOR DEVICE PRODUCTION METHOD

Takahiro Sasaki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 18, 2000, Appl. No. 551,780

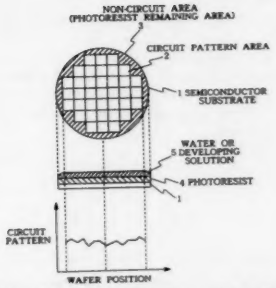
Claims priority, application Japan, Apr. 21, 1999, 11-113143

Int. Cl. H01L *21/302;* **B44C** *1/22*

U.S. Cl. 438—745 **4 Claims**

1. A semiconductor production method comprising the steps of:

(a) coating an entire surface of a semiconductor substrate with a photoresist;



(b) exposing said surface excluding a far peripheral region thereof in a first patterned exposure to light energy of a first intensity;

(c) exposing said far peripheral region in a second patterned exposure to light energy of a second intensity lower than said first intensity; and

(d) applying a development solution uniformly to said photoresist coating to develop exposed areas of said photoresist whereby to remove completely areas of said photoresist exposed to said first light energy intensity in exposure step (b) while removing only partly a portion in the thickness of said far peripheral region of said photoresist exposed to said second light energy intensity in exposure step (c).

US 6,331,490 B1

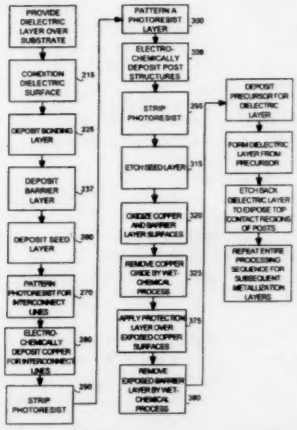
PROCESS FOR ETCHING THIN-FILM LAYERS OF A WORKPIECE USED TO FORM MICROELECTRIC CIRCUITS OR COMPONENTS

E. Henry Stevens, Colorado Springs, Colo., and Richard Pfeiffer, Bigfork, Mont., assignors to Semitool, Inc.

Continuation-in-part of application No. 09/076,565, filed on May 12, 1998, and a continuation-in-part of application No. 09/041,901, filed on Mar. 13, 1998. This application Sep. 24, 1998, Appl. No. 160,522.

Int. Cl. C09K *13/04;* **H01L** *21/461*

U.S. Cl. 438—754 **16 Claims**



1. A process for use in manufacturing a microelectronic interconnect or component on the surface of a workpiece, the process comprising the steps of:

depositing a seed layer over a surface of the workpiece;

providing a protective mask having a pattern over the seed layer;

electrochemically depositing a metal onto portions of the seed layer through patterned portions of the protective mask;

removing the protective mask to thereby expose the seed layer and the electrolytically deposited metal;

oxidizing the seed layer and at least a surface portion of the electrochemically deposited metal using a controlled oxidation process;

etching the oxidized seed layer and surface portion of the electrochemically deposited metal in a generally inert atmosphere using an etchant that selectively etches the oxidized portions without substantial etching of non-oxidized portions of the electrochemically deposited metal.

US 6,331,491 B1

Patent Not Issued For This Number

US 6,331,492 B2

NITRIDATION FOR SPLIT GATE MULTIPLE VOLTAGE DEVICES

George R. Misium, Plano, and Sunil V. Hattangady, McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Provisional application No. 60/070,174, filed on Dec. 31, 1997. This application Dec. 18, 1998, Appl. No. 215,909.

Int. Cl. H01L *21/31*

U.S. Cl. 438—762 **25 Claims**

13. A low temperature method for making gate oxides on a silicon wafer surface for multiple voltage applications comprising the steps of:

growing a first oxide layer on at least first and second areas of a silicon wafer surface;

converting a top layer of said first oxide layer on said at least first and second areas of said silicon wafer surface into first and second nitrided areas by exposing said first and second oxide areas to a nitrogen ion containing plasma;

patterning a layer of photoresist over said oxide layer and said nitrided area thereon over said first oxide area;

partially etching said nitrided area over said oxide in said second area and the oxide layer thereunder which is not protected by said photoresist;

stripping said photoresist;

etching the remaining oxide from said second area to expose the wafer surface at said second area of the oxide layer not protected by photoresist;

etching the first nitrided area; and

exposing the wafer surface to an oxidizing environment to further oxidize said first and oxidize said second oxide areas to provide an oxide layer over said first area thicker than said oxide layer over said second area.

US 6,331,493 B1

PROCESS FOR MAKING LOW DIELECTRIC CONSTANT DIELECTRIC FILMS

Sujit Sharan, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

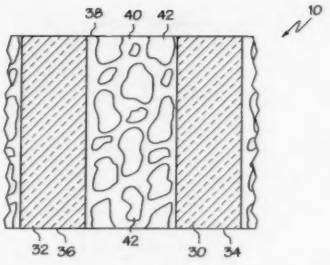
Continuation of application No. 09/384,668, filed on Aug. 27, 1999, now Pat. No. 6,140,249. This application Aug. 31, 2000, Appl. No. 653,299.

This patent is subject to a terminal disclaimer.

Int. Cl. H01L *21/31;21/469*

U.S. Cl. 438—765 **39 Claims**

1. A process for forming voids in a layer of dielectric material, wherein the process comprises the step of exposing said layer of dielectric material to a concentration of an oxygen plasma at a



temperature and a pressure for said oxygen plasma to etch said layer of dielectric material to form voids in said layer of dielectric material.

US 6,331,494 B1

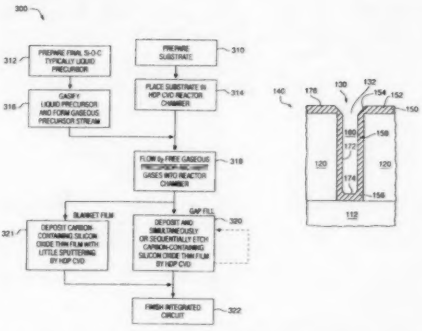
DEPOSITION OF LOW DIELECTRIC CONSTANT THIN FILM WITHOUT USE OF AN OXIDIZER

Darin Scott Olson, Menlo Park, and T. S. Ravi, San Jose, both of Calif., assignors to Novellus Systems, Inc., San Jose, Calif.

Filed Dec. 30, 1999, Appl. No. 474,844

Int. Cl. H01L *21/469*

U.S. Cl. 438—770 **39 Claims**



1. A method for forming an oxide thin film during integrated circuit fabrication, comprising steps of:

providing a substrate in a reaction chamber;

providing a reactant gas mixture in said reaction chamber, wherein said reactant gas mixture and said reaction chamber do not contain an oxidizer; and

reacting said reactant gas mixture in said reaction chamber to deposit oxide material on said substrate.

US 6,331,495 B1

SEMICONDUCTOR STRUCTURE USEFUL IN A SELF-ALIGNED CONTACT ETCH AND METHOD FOR MAKING SAME

David S. Becker, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Division of application No. 09/010,666, filed on Jan. 22, 1998, now Pat. No. 6,018,184. This application Dec. 9, 1999, Appl. No. 457,995.

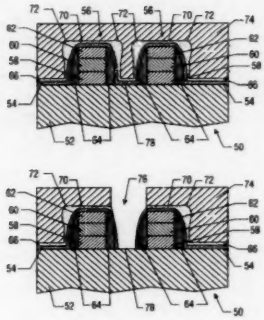
Int. Cl. H07L *21/00*

U.S. Cl. 438—774 **35 Claims**

19. A method for making a semiconductive device having at least one contact opening therein, comprising the steps of:

forming a semiconductor substrate having a contact area;

forming at least one structure on a surface of said substrate;



forming a conformal layer of undoped oxide over at least a portion of the structure and the substrate;

forming a breadloafed layer of undoped oxide over at least a portion of the structure and the substrate such that said layer of undoped oxide is thicker at an upper side region of said structure relative to a lower side region of said structure;

forming a layer of doped oxide over the conformal and breadloafed oxide layers; and

etching an opening to the contact area of the substrate through the conformal, undoped, and doped oxide layers, said opening being adjacent said structure.

US 6,331,496 B2
HIGH PERFORMANCE CERAMIC MATRIX COMPOSITE

Tetsuo Nakayasu, Yamaguchi-ken, Japan, assignor to Research Institute of Advanced Material Gas-Generator, Ltd., Tokyo, Japan

Filed Feb. 25, 1999, Appl. No. 257,214
Claims priority, application Japan, Sep. 16, 1998, 10-261934
Int. Cl. C04B *35/80*
U.S. Cl. 501—95.2 **3 Claims**

1. A high-performance ceramic matrix composite, containing inorganic fiber for reinforcement, and a matrix comprising 40 to 95% by weight of silicon carbide ceramic and 5 to 60% by weight of an oxide phase dispersed in said silicon carbide ceramic, said oxide phase forming a continuous network structure in said matrix, said oxide phase is selected from the group consisting of $ZrSiO_4$, BaO— MgO—Al_2O_3—SiO_2 glass ceramic, and SrO—Al_2O_3—SiO_2 glass ceramic, and said matrix surrounding and filling voids between said inorganic fiber.

US 6,331,497 B1
POLYCRYSTALLINE CUBIC BORON NITRIDE CUTTING TOOL

Matthew W. Collier, Draper; Xian Yao, Sandy, and Brian G. Bowers, Payson, all of Utah, assignors to Smith International, Inc., Houston, Tex.

Continuation-in-part of application No. 09/361,846, filed on Jul. 27, 1999, now Pat. No. 6,140,262. This application Feb. 28, 2000, Appl. No. 514,476.
Int. Cl. C04B *35/5831;35/5835*
U.S. Cl. 501—96.4 **30 Claims**

1. A CBN cutting tool comprising a body of polycrystalline cubic boron nitride having a crystal size in the range of from 10 to 17 micrometers comprising:

in the range of from 2 to 15% by weight of a material selected from the group of refractory compounds consisting of titanium diboride, aluminum diboride, titanium carbide, titanium nitride, titanium carbonitride, titanium aluminum carbonitride, and $(Ti_xM_y)CN$, wherein the alloying metal M may be one or more of silicon, chromium, cobalt, tungsten and tantalum and the proportion of alloying metal to titanium, y/x, is in the range of from 0.05 to 0.3, the carbonitrides having a carbon to nitrogen proportion in the range of from 30 atomic percent carbon and 70 atomic percent nitrogen to 70 atomic percent carbon and 30 atomic percent nitrogen;

an infiltrant containing aluminum and/or silicon;

diamond more than stoihiometric with the silicon in the infiltrant for forming silicon carbide; and

a balance of substantially CBN.

US 6,331,498 B1
DIELECTRIC PORCELAIN COMPOSITION FOR ELECTRONIC DEVICES

Takeshi Shimada; Kazuhiro Nishikawa, both of Kyoto, and Kazuya Toji, Osaka, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

PCT No. PCT/JP98/05524, § 371 Date Jun. 23, 2000, § 102(e) Date Jun. 23, 2000, PCT Pub. No. WO99/33764, PCT Pub. Date Jul. 8, 1999
PCT Filed Dec. 4, 1998, Appl. No. 581,569
Claims priority, application Japan, Dec. 25, 1997, 9-368099
Int. Cl. C04B *35/495*
U.S. Cl. 501—135 **5 Claims**

1. A dielectric ceramic composition for electronic devices, comprising

a composition having a base composition represented by

$$XBa\{Zn_{1/3}(Ta_MNb_{1-M})_{2/3}\}O_3—Y(Ba_{Z}Sr_{1-Z})(Ga_{1/2}Ta_{1/2})O_3$$

where X, Y, Z, and M limiting the compositional range meet the following values:

$$X+Y=1;0.3\leqq X<1;0.7\geqq Y>0;0\leqq Z\leqq 1;\text{ and } 0.2\leqq M\leqq 0.8.$$

US 6,331,499 B1
MICROWAVE DIELECTRIC CERAMIC COMPOSITION

Takeshi Shimada, Kyoto; Keisuke Kageyama, Toyonaka, and Soyoko Ando, Ibaraki, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

PCT No. PCT/JP98/02467, § 371 Date Feb. 9, 2001, § 102(e) Date Feb. 9, 2001, PCT Pub. No. WO99/62840, PCT Pub. Date Dec. 9, 1999
PCT Filed Jun. 4, 1998, Appl. No. 701,310
Int. Cl. C04B *35/46*
U.S. Cl. 501—139 **1 Claim**

1. A microwave dielectric ceramic composition whose compositional formula is represented by:

$$Ba_{6-3x}[Sm_{1-y}(Nd_{1-w-v}Eu_wLn_v)_{y-z}Bi_z]_{8+2x}Ti_{18}O_{54} \text{ (where Ln=La,Pr)}$$

where the values of x, y, z, w and v in the compositional formula satisfy the following values:

$0.5<x<0.8$, $0.3<y<0.5$, $0<z<0.4$, $0<w\leqq 1$,$0<v\leqq 1$, $y-z>0$.

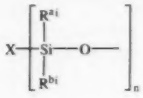
US 6,331,500 B1
FUNCTIONALIZED MOLECULAR SIEVES

Katsuyuki Tsuji; Christopher W. Jones, and Mark E. Davis, all of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Provisional application No. 60/057,652, filed on Aug. 25, 1997, Provisional application No. 60/083,787, filed on May 1, 1998. This application Jul. 31, 1998, Appl. No. 127,543.
Int. Cl. B01J *29/06*
U.S. Cl. 502—63 **36 Claims**

1. A molecular sieve comprising a crystalline framework and micropores of substantially uniform size and shape formed therein,

wherein the size of the micropore is less than or equal to 15 Å and wherein the framework includes one or more monomers that are covalently bonded thereto and substantially evenly distributed therein, the monomer having the general formula



wherein:

n is an integer from 1 to 5;

X is a substituted or unsubstituted moiety; and

R^{ai} and R^{bi} for i=1 to i=n are each independently either oxygen, or a substituted or unsubstituted moiety, wherein the moiety is selected from the group consisting of C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_2–C_{20} alkynyl, cycloalkyl, cycloalkenyl, aryl, and heteroaryl, each optionally substituted with one or more substituents selected from the group consisting of C_1–C_5 alkyl, C_2–C_5 alkenyl, C_2–C_5 alkynyl, cycloalkyl, cycloalkenyl, aryl, and heteroaryl, and a functional group selected from the group consisting of alcohol, sulfonic acid, phosphine, thiol, thioether, ketone, aldehyde, ester, ether, amine, imine, amide, imide, imido, nitro, carboxylic acid, disulfide, carbonate, isocyanate, carbodiimide, carboalkoxy, carbamate, acetal, ketal, boronate, cyano, cyanohydrin, hydrazine, oxime, hydrazide, enamine, sulfone, sulfide, sulfenyl, and halogen.

US 6,331,501 B1

CATALYST FOR α-OLEFIN POLYMERIZATION AND PROCESS FOR PRODUCING α-OLEFIN POLYMER

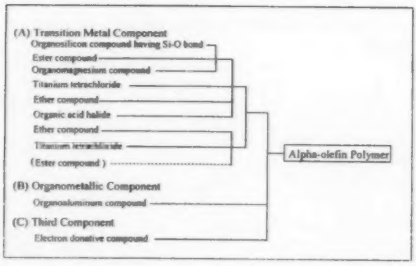
Makoto Satoh, Ichihara; Yasuki Fujiwara, Ichikawa, and Akio Imai, Narashino, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 16, 1999, Appl. No. 250,286

Claims priority, application Japan, Feb. 19, 1998, 10-037586

Int. Cl. B01J *31/00;37/00;* **C08F** *4/02;4/60*

U.S. Cl. 502—128 **8 Claims**



1. A catalyst for α-olefin polymerization obtained by a process comprising contacting together:

(A) a solid catalyst component containing a titanium compound which is obtained by treating a solid product obtained by contacting an organosilicon compound having an Si—O bond, an ester compound and an organomagnesium compound, with an ether compound, titanium tetrachloride and an acyl halide, and successively treating said treated solid with a mixture of an ether compound a titanium tetrachloride, or a mixture of an ether compound, titanium tetrachloride and an ester compound;

(B) an organoaluminum compound; and

(C) an electron-donative compound.

US 6,331,502 B1

CATALYST SYSTEM CONTAINING A SEMILABILE ANIONIC LIGAND AND A USE OF SUCH CATALYST SYSTEM TO PRODUCE α, β, -UNSATURATED CARBOXYLIC ACIDS AND THEIR ESTERS

Raghunath Vitthal Chaudhari; Jayasree Puthenmadathil, and Sunil Purushotham Gupte, all of Maharashtra, India, assignors to Council of Scientific and Industrial Research, New Delhi, India

Filed May 21, 1999, Appl. No. 316,022

Claims priority, application India, Dec. 9, 1998, 3693/98

Int. Cl. B01J *31/00;27/14;27/185;23/42*

U.S. Cl. 502—162 **29 Claims**

1. A novel catalyst system for converting alkynes to α,β-unsaturated acids and their esters, the catalyst system comprising:

(a) a palladium metal source;

(b) a monodentate phosphorus ligand;

(c) anionic semilabile chelating ligand containing N-donor and an O group selected from the group consisting of 2-hydroxy pyrridine, (2-(2'-hydroxy ethyl pyrridine), pyridil-3, piperidil-2, quinolyl-2, isoquinolyl-3-carboxylic acids, pyridil-2, piperidil-2-carboxylic acids, 8-hydroxy quinoline, and pyridine carboxylic acid;

(d) acid promoter; and

(e) proton source;

wherein the ratio of palladium:anionic semilabile ligand:phosphorous:acid promoter is in the range of 1:2:4:10 to 1:15:30:40.

US 6,331,503 B1

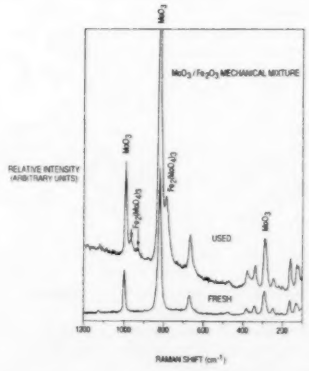
IN-SITU FORMATION OF METAL-MOLYBDATE CATALYSTS

Israel E. Wachs, Bridgewater, N.J., and Laura E. Briand, Buenos Aires, Argentina, assignors to Lehigh University, Bethlehem, Pa.

Provisional application No. 60/081,950, filed on Apr. 15, 1998. This application Apr. 6, 1999, Appl. No. 287,021.

Int. Cl. B01J *23/00;23/40;23/42;23/58;23/60*

U.S. Cl. 502—305 **7 Claims**



1. A method for forming catalytically active metal-molybdate surfaces effective for methanol oxidation to formaldehyde comprising the steps of:

forming a fixed bed of solids comprising a first particulate source of metal oxide and a second particulate source of molybdenum oxide, said first particulate source of metal oxide being different from said second particulate source of molybdenum oxide; and

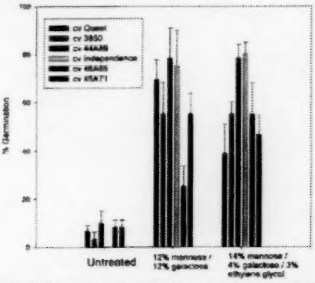
passing a reactant stream containing methanol and oxygen through said fixed bed at conditions suitable for conversion of methanol to formaldehyde wherein catalytically active metal-molybdate is formed within said fixed bed.

US 6,331,504 B1

SEED TREATMENTS FOR IMPROVING FALL SEEDING SURVIVAL OF CRUCIFERS

J. John Balsevich, 304 Lake Crescent, Saskatoon Saskatchewan, Canada, S7H 3A2

Filed Jul. 27, 2000, Appl. No. 627,240
Claims priority, application Canada, Jul. 27, 1999, 2278871
Int. Cl. A01N *43/16;31/02*
U.S. Cl. 504—100 **20 Claims**



1. A method for enhancing spring emergence of fall seeded crucifers, comprising

(a) exposing the seed to an aqueous treatment solution comprising 5–30% w/v of a water soluble sugar, selected from the group consisting of mannose, a mannose derivative, a mixture of mannose and a mannose derivative, a mixture of mannose and another water-soluble sugar, a mixture of a mannose derivative and another water-soluble sugar, and a mixture of mannose, a mannose derivative and another water-soluble sugar, for a time sufficient for absorption of the solution by the seed, but insufficient for germination of the seed to occur, and

(b) drying the seed to ambient moisture content.

US 6,331,505 B1

METHOD FOR INCREASING PLANT PRODUCTIVITY USING GLUTAMIC ACID AND GLYCOLIC ACID

Alan M. Kinnersley, East Lansing, Mich., assignor to Emerald BioAgriculture Corporation, Lansing, Mich.

Continuation-in-part of application No. 09/182,140, filed on Oct. 29, 1998, now Pat. No. 6,124,241. This application May 2, 2000, Appl. No. 563,669.
This patent is subject to a terminal disclaimer.
Int. Cl. A01N *37/36;37/44*
U.S. Cl. 504—147 **53 Claims**

1. A composition, comprising a salt of glycolic acid and at least one of glutamic acid or a salt thereof.

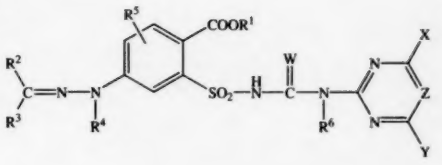
US 6,331,506 B1

DISUBSTITUTED METHYLIDENE HYDRAZINOPHENYL SULFONYLUREAS, PROCESS FOR THEIR PRODUCTION AND THEIR USE AS HERBICIDES AND PLANT GROWTH REGULATORS

Heinz Kehne; Lothar Willms, both of Hofheim; Klaus Bauer, Hanau; Hermann Bieringer, Eppstein, and Christopher Rosinger, Hofheim, all of Germany, assignors to Hoechst Schering AgrEvo GmbH, Berlin, Germany

PCT No. PCT/EP97/01244, § 371 Date Sep. 16, 1998, § 102(e) Date Sep. 16, 1998, PCT Pub. No. WO97/35863, PCT Pub. Date Oct. 2, 1997
PCT Filed Mar. 12, 1997, Appl. No. 142,961
Claims priority, application Germany, Mar. 12, 1997, 196 11 355
Int. Cl. C07D *239/48;239/47;239/52;* **A01N** *43/54*
U.S. Cl. 504—214 **6 Claims**

1. A compound of the formula (I) or a salt thereof



in which

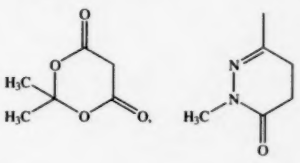
R^1 is H or a hydrocarbon radical which is unsubstituted or substituted, or a heterocyclyl radical which is unsubstituted or substituted, where each of the last two-mentioned radicals including substituents has 1 to 20 carbon atoms,

R^2 and R^3 for the definition of R^2 and R^3 one of the following combinations a, b, or c applies:

a) R^2 is CN, NO_2 or acyl and

R^3 is CN, NO_2, acyl, CF_3, a substituted or unsubstituted monocyclic, bicyclic or polycyclic aryl radical having from 6 to 20 carbon atoms including substituents, or a substituted or unsubstituted heterocycle,

b) CR^2R^3 together form a ring having 3 to 8 ring atoms which is carbocyclic or heterocyclic and has one heteroatom selected from the group consisting of O, N, S, SO, or SO_2 or is a heterocycle selected from the group consisting of piperidyl, piperazinyl, dioxolanyl, morpholinyl; or from the following heterocyclic rings:



wherein

said rings have at least one carbon atom substituted by an oxo group in a position adjacent to the carbon atom in 1-position of the CR^2R^3 and is optionally further substituted by one or more radicals selected from the group consisting of $(C_1–C_4)$alkyl, $(C_1–C_4)$haloalkyl, halogen, and oxo;

c) R^2 is NO_2 or $[(C_1–C_4)alkyl]carbonyl$ and

R^3 is H or $(C_1–C_4)$alkyl,

R^4 is H or an aliphatic hydrocarbon radical having 1 to 6 carbon atoms in the hydrocarbon moiety where the last-mentioned radical is unsubstituted or substituted by one or more radicals are selected from the group consisting of halogen, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio, $(C_1–C_4)$alkylsulfonyl, $[(C_1–C_4)alkyl]carbonyl$, $[(C_1–C_4)alkoxy]carbonyl$, CN, substituted or unsubstituted phenyl, unsubstituted or substituted $(C_3–C_6)$cycloalkyl, $(C_3–C_6)$alkenyl or $(C_3–C_6)$alkynyl or an acyl radical,

R^5 is H, halogen, NO_2, CN, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, $[(C_1–C_4)alkyl]carbonyl$ or $[(C_1–C_4)alkoxy]carbonyl$, where each of the four last-mentioned radicals is unsubstituted or substituted in the alkyl moiety by one or more halogen atoms,

R^6 is H or $(C_1–C_4)$alkyl,

W is an oxygen or sulfur atom,

X, Y independently of one another are H, halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio, where each of the 3 last-mentioned radicals is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, $(C_1–C_4)$alkoxy and $(C_1–C_4)$alkylthio, or is mono- or $di[(C_1–C_4)alkyl]amino$,

(C_3–C_6)cycloalkyl, (C_2–C_5)alkenyl, (C_3–C_5)alkynyl, (C_3–C_5)alkenyloxy or (C_2–C_5)alkynyloxy and

Z is CH,

and wherein

said substituents for the hydrocarbon or aryl radicals, unless otherwise defined, are halogen, alkyl, alkenyl, alkynyl, cycloalkyl, alkoxy, haloalkoxy, alkylthio, hydroxyl, amino, nitro, carboxyl, cyano, azido, alkoxycarbonyl, alkylcarbonyl, formyl, carbamoyl, mono- and dialkylamninocarbonyl, acylamino, mono- and dialkylamino, alkylsulfinyl, haloalkylsulfinyl, alkylsulfonyl, haloakylsulfonyl, haloalkyl, haloalkenyl, haloalkynyl, alkenyloxy, alkynyloxy, phenoxy, optionally substituted aryl, and optionally substituted heterocycle,

heterocycle, unless otherwise defined, is a saturated or unsaturated ring having from 3 to 7 ring atoms having one ring atom selected from the groups consisting of N, O, S, SO, and SO_2 or is a heteroaromatic radical having 5 or 6 ring atoms having one ring atom selected from the group consisting of N, O or S; or is a heterocycle selected from the group consisting of pyrimidinyl, pyradazinyl, pyrazinyl, thiazole, oxazole, pyrazolyl, imidazole, piperidyl, piperazinyl, dioxolanyl and morpholinyl; and

the substituents for the heterocyclic groups are the same as identified above for the hydrocarbon and the aryl radicals or oxo; and

acyl is a formyl or is a radical of an organic acid having 1 to 20 carbon atoms, said radical being optionally substituted by the hydrocarbyl or aryl substituents, identified above, and is selected from the group consisting of carboxylic acid, thiocarboxylic acid, N-substituted iminocarboxylic acid, carbonic monoesters, N-substituted carbamic acid, sulfonic acid, sulfinic acid, phosphonic acid, and phosphinic acid.

US 6,331,507 B1

SUBSTITUTED AROMATIC THIOCARBOXYLIC ACID AMIDES AND THEIR USE AS HERBICIDES

Karl-Heinz Linker; Kurt Findeisen, both of Leverkusen; Roland Andree; Mark-Wilhelm Drewes, both of Langenfeld; Andreas Lender, Wuppertal; Otto Schallner, Monheim; Wilhelm Haas, Pulheim; Hans-Joachim Santel, and Markus Dollinger, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

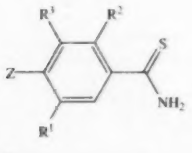
Division of application No. 08/732,257, filed as application No. PCT/EP95/01507, filed on Apr. 21, 1995, now Pat. No. 6,077,813. This application Dec. 22, 1999, Appl. No. 470,583. Claims priority, application Germany, May 4, 1994, 44 15 655; Jan. 19, 1995, 195 00 439

Int. Cl. A01N *43/40;* **C07D** *211/34*

U.S. Cl. 504—244 **5 Claims**

1. A substituted aromatic thiocarboxamide of the formula (I)

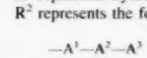
(I)



wherein

R^1 represents hydrogen, fluorine, chlorine or bromine,

R^2 represents the following group



in which

A^1 represents a single bond, or represents oxygen, sulphur, —SO—, —SO_2—, —CO— or the group —$N(A^4)$—, in which A^4 represents hydrogen, hydroxyl, C_1–C_4-alkyl, C_3–C_4-alkenyl, C_3–C_4-alkinyl, C_1–C_4-alkoxy, phenyl, C_1–C_4-alkylsulphonyl or phenylsulphonyl,

A^1 additionally represents in each case optionally fluorine- or chlorine-substituted C_1–C_6-alkanediyl, C_2–C_6-alkenediyl, C_2–C_6-alkinediyl, C_3–C_6-cycloalkanediyl, C_3–C_6-cycloalkenediyl or phenylene,

A^2 represents a single bond, or represents oxygen, sulphur, —SO—, —SO_2—, —CO— or the group —$N(A^4)$—, in which A^4 represents hydrogen, hydroxyl, C_1–C_4-alkyl, C_3–C_4-alkenyl, C_3–C_4-alkinyl, C_1–C_4-alkoxy, phenyl, C_1–C_4-alkylsulphonyl or phenylsulphonyl,

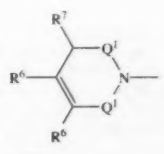
A^2 additionally represents in each case optionally fluorine- or chlorine-substituted C_1–C_6-alkanediyl, C_2–C_6-alkenediyl, C_2–C_6-alkinediyl, C_3–C_6-cycloalkanediyl, C_3–C_6-cycloalkenediyl or phenylene,

A^3 represents hydrogen, hydroxyl, amino, cyano, isocyano, thiocyanato, nitro, carboxyl, carbamoyl, thiocarbamoyl, sulpho, chlorosulphonyl, halogen, or represents in each case optionally halogen- or C_1–C_4-alkoxy-substituted alkyl, alkoxy, alkylthio, alkylsulphinyl, alkylsulphonyl, alkylamino, dialkylamino, alkoxycarbonyl or dialkoxy(thio-)phosphoryl having in each case 1 to 6 carbon atoms in the alkyl groups, or represents in each case optionally halogen-substituted alkenyl, alkenyloxy, alkenylamino, alkylideneamino, alkenyloxycarbonyl, alkinyl, alkinyloxy, alkinylamino or alkinyloxycarbonyl having in each case 2 to 6 carbon atoms in the alkenyl, alkylidene or alkinyl groups, or represents in each case optionally halogen-, cyano-, carboxyl-, C_1–C_4-alkyl- and/or C_1–C_4-alkoxy-carbonyl-substituted cycloalkyl, cycloalkyloxy, cycloalkylalkyl, cycloalkylalkoxy, cycloalkylideneamino, cycloalkyloxycarbonyl or cycloalkylalkoxycarbonyl having in each case 3 to 6 carbon atoms in the cycloalkyl groups and optionally 1 to 4 carbon atoms in the alkyl groups, or represents in each case optionally nitro-, cyano-, carboxyl-, halogen-, C_1–C_4-alkyl-, C_1–C_4-halogenoalkyl-, C_1–C_4-alkyloxy-, C_1–C_4halogenoalkyloxy- and/or C_1–C_4-alkoxy-carbonyl-substituted phenyl, phenyloxy, phenyl-C_1–C_4-alkyl, phenyl-C_1–C_4-alkoxy, phenyloxycarbonyl or phenyl-C_1–C_4-alkoxycarbonyl, (in each case optionally totally or partially hydrogenated) pyrrolyl, pyrazolyl, imidazolyl, triazolyl, furyl, thienyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, oxadiazolyl, thiadiazolyl, pyridinyl, pyrimidinyl, triazinyl, pyrazolyl-C_1–C_4-alkyl, furyl-C_1–C_4-alkyl, thienyl-C_1–C_4-alkyl, oxazolyl-C_1–C_4-alkyl, isoxazole-C_1–C_4-alkyl, thiazole-C_1–C_4-alkyl, pyridinyl-C_1–C_4-alkyl, pyrimidinyl-C_1–C_4-alkyl, pyrazolylmethoxy or furylmethoxy, or represents perhydropyranylmethoxy or pyridylmethoxy,

R^3 represents hydrogen, fluorine, chlorine or bromine or together with R^2 represents an alkanediyl or alkenediyl group having in each case up to 4 carbon atoms which optionally contains at the beginning (or end) or within the hydrocarbon chain an oxygen atom, a sulphur atom, an SO_2 group, an NH group, an N—C_1–C_4-alkyl group, a carbonyl group and/or a thiocarbonyl group, and

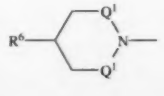
Z represents Z^3:

(Z^3)



or Z^{15}:

(Z^{15})

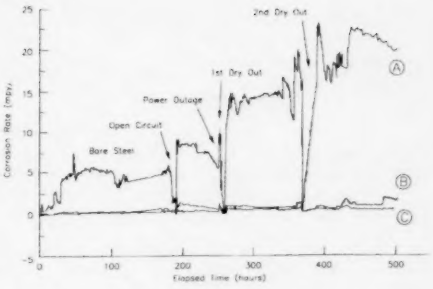


wherein

Q^1 represents a group from the series —CO—, —CS—, —CH_2—, —CH(OH)—, —CHCl—, —CHBr—, —C(=CH_2)—, —C(=CHF)—, —C(=CF_2)—, —C(=CHCl)—, —C(=CHBr)—, —C(=CHOCHF_2)—, —C (=CHOCF_3)—, —C(=CHOCH_2CF_3)—,

R^6 represents hydrogen, amino, nitro, cyano, carboxyl, carbamoyl, fluorine, chlorine, bromine, methyl, ethyl, n- or i-propyl, cyclopropyl, difluoromethyl, trifluoromethyl, chlorodifluoromethyl, methoxy, ethoxy, n- or i-propoxy, difluoromethoxy, trifluoromethoxy, chlorodifluoromethoxy, methylthio, ethylthio, n- or i-propylthio, difluoromethylthio, trifluoromethylthio, chlorodifluoromethylthio, methylamino, ethylamino, n- or i-propylamino, dimethylamino, diethylamino, methoxycarbonyl or ethoxycarbonyl, and

R^7 represents hydrogen, hydroxyl, amino, cyano, methyl, ethyl, n- or i-propyl, difluoromethyl, methoxy, ethoxy, n- or i-propoxy.



at least one silica containing material in an amount effective to thicken the composition.

US 6,331,508 B1

METHOD FOR CONTROLLING GAS HYDRATES IN FLUID MIXTURES

Marek K. Pakulski, The Woodlands, Tex., assignor to BJ Service Company, U.S.A., Houston, Tex.

Division of application No. 08/543,014, filed on Oct. 13, 1995, now Pat. No. 5,741,758. This application Feb. 2, 1998, Appl. No. 696,447.

This patent is subject to a terminal disclaimer.

Int. Cl. C09K *3/00;* **C07C** *9/00*

U.S. Cl. 507—90 **17 Claims**

1. A method for controlling the formation of gas hydrate crystals in a fluid mixture comprising:

admixing with said fluid mixture an effective amount of at least one additive having the general formula:

$$H_2N—C_dH_{2d}—(—OC_nH_{2n}—)_e—NH_2$$

and wherein:

d is 1–6,

e is 1–8, and

n is 2 or 3.

US 6,331,509 B1

CORROSION RESISTANT LUBRICANTS, GREASES, AND GELS

Robert L. Heimann, Stoutsville; Nancy M. Heimann, Centralia; William M. Dalton, Moberly; Donald W. Taylor, Liberty, and Todd W. Scrivens, Maysville, all of Mo., assignors to Elisha Technologies Co LLC, Moberly, Mo.

Continuation-in-part of application No. 09/370,346, filed on Aug. 6, 1999, which is a continuation-in-part of application No. 09/130,790, filed on Aug. 7, 1998, now Pat. No. 6,010,985, which is a continuation-in-part of application No. 09/045,450, filed on Mar. 20, 1998, now Pat. No. 6,017,857, which is a continuation-in-part of application No. 09/016,461, filed on Jan. 30, 1998, now Pat. No. 6,010,984, Provisional application No. 60/045,466, filed on May 2, 1997, Provisional application No. 60/036,026, filed on Jan. 31, 1997. This application Mar. 27, 2000, Appl. No. 535,319.

This patent is subject to a terminal disclaimer.

Int. Cl. C10M *113/12;113/08*

U.S. Cl. 508—136 **20 Claims**

1. A composition comprising a combination comprising:

at least one synthetic base oil,

at least one polymer that is at least partially miscible with said at least one base oil,

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US 6,331,510 B1

SYNTHETIC DIESEL ENGINE LUBRICANTS CONTAINING DISPERSANT-VISCOSITY MODIFIER AND FUNCTIONALIZED PHENOL DETERGENT

Thomas T. Curtis, Duffield; Gordon D. Lamb, Mickleover, both of United Kingdom, and William D. Abraham, South Euclid, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Feb. 13, 2001, Appl. No. 782,127

Int. Cl. C10M *129/10*

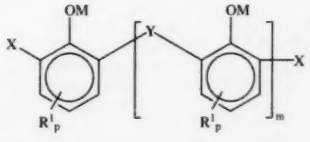
U.S. Cl. 508—578 **28 Claims**

1. A lubricant suitable for use in a diesel engine, comprising:

(a) a synthetic base oil composition, said base oil overall having a kinematic viscosity of at least about 4.8×10^{-6} m^2/s (4.8 cSt) at 100° C. and a viscosity index of at least about 110;

(b) a dispersant-viscosity modifier; and

(c) a sulfur-free functionalized hydrocarbyl-substituted phenol detergent which is a saligenin derivative represented by the formula



wherein X comprises —CHO or —CH_2OH, Y comprises —CH_2— or —CH_2OCH_2—, and wherein such —CHO groups comprise at least about 10 mole percent of the X and Y groups; M is hydrogen, ammonium, or a valence of a metal ion, R^1 is a hydrocarbyl group containing 1 to about 60 carbon atoms, m is 0 to about 10, and each p is independently 0, 1, 2, or 3, provided that at least one aromatic ring contains an R^1 substituent and that the total number of carbon atoms in all R^1 groups is at least 7.

US 6,331,511 B1

DETERGENT COMPOSITION WITH A SOFTENING AND PROTECTIVE ACTION OF NATURAL FIBRES

Calogero Genova, Vizzolo Predabissi; Giuseppe Giammasi, Melegnano, and Francesco Buosi, Milan, all of Italy, assignors to Condea Augusta S.p.A., Palermo, Italy

Filed Jul. 9, 1999, Appl. No. 349,508

Claims priority, application Italy, Jul. 10, 1998, MI98A1579

Int. Cl. C11D *3/20;* **A61K** *7/06*

U.S. Cl. 510—119 **14 Claims**

1. A detergent composition, characterized in that said composition has no cationic surface-active agents, and consists of:

(a) surface-active agents selected from the group consisting of anionic, nonionic and amphoteric surface-active agents and relative mixtures;

(b) esters having the formula (I):

$$R^1—CO—O—(—CH_2—CH_2—O—)_a—R^2 \quad (I)$$

wherein:

a is between zero and 20;

R^2 is a mono-functional hydrocarbon radical, having from 6 to 20 carbon atoms;

R^1 is a mono-functional hydrocarbon radical having the formula:

$$—CH(OH)—CH(R^3)—COO—(—CH_2—CH_2—O—)_{a'}—R^4,$$

wherein R^3=H or OH; a' is between 0 and 20, and R^4 is a monofunctional hydrocarbon radical having from 6 to 20 carbon atoms;

the weight ratio between the surface-active agents (a) and the esters having the formula (I) ranging from 1/1 to 600/1;

wherein the balance to 100% by weight of said composition consists of water and minor components selected from the group consisting of antifoaming agent, perfume, preservative and combinations thereof.

US 6,331,512 B1

PHOSPHATE-FREE AUTOMATIC DISHWASHING DETERGENT

Michael R. Foote, Ada, and Ernie Brumbaugh, Rockford, both of Mich., assignors to Amway Corporation, Ada, Mich.

Provisional application No. 60/157,345, filed on Sep. 29, 1999. This application Jun. 23, 2000, Appl. No. 603,135.

Int. Cl. C11D *3/00;3/22;3/08;3/39*

U.S. Cl. 510—226 **14 Claims**

1. A concentrated automatic dishwashing composition comprising:

a) about 1% to 80% of an alkali metal silicate;

b) about 1% to 20% of a nonionic surfactant;

c) about 5% to 50% of an oxygen-containing bleaching agent;

d) about 0.5% to 10% of one or more alkaline stable enzyme; and

e) about 5% to 30% of a polyacrylate,

wherein the composition is free of any carbonate, phosphate, and chlorine compounds.

US 6,331,513 B1

COMPOSITIONS FOR DISSOLVING METAL SULFATES

Gene H. Zaid, Sterling, and Beth Ann Wolf, Hutchinson, both of Kans., assignors to Jacam Chemicals L.L.C., Sterling, Kans.

Filed Apr. 28, 1999, Appl. No. 301,248

Int. Cl. C02F *5/10;* **C11D** *3/60;* **C23F** *14/02;* **E21B** *43/28*

U.S. Cl. 510—253 **16 Claims**

1. A composition for dissolving metal sulfates comprising an aqueous dispersion including:

a component selected from the group consisting of (1) an organophosphorus compound which is a salt of a chelating agent, (2) other organophosphorus compounds, (3) hydroxyacetic acid, and (4) mixtures thereof;

sodium bicarbonate;

a base; and

a salt of a chelating agent when said component does not include (1) of said group.

US 6,331,514 B1

STERILIZING AND DISINFECTING COMPOUND

Stephen R. Wurzburger, P.O. Box C, Goodyear Bar, Calif. 95944, and James Michael Overton, 1127 Nickel La., Yuba City, Calif. 95911

Continuation-in-part of application No. 08/994,547, filed on Dec. 19, 1997, now abandoned, which is a continuation-in-part of application No. 08/911,773, filed on Aug. 15, 1997, now Pat. No. 5,895,782, which is a continuation-in-part of application No. 08/701,776, filed on Aug. 26, 1996, now Pat. No. 5,830,838. This application May 7, 1999, Appl. No. 307,100.

Int. Cl. C11D *7/08;7/10;* **B08B** *3/04;3/08*

U.S. Cl. 510—254 **5 Claims**

1. A method for preparing a disinfecting solution which includes the steps:

(a) selecting one of a group that consists of:

(i) calcium hydride;

(ii) calcium hydrate;

(iii) calcium hydroxide;

(iv) calcium;

(b) mixing a quantity of sulfuric acid in water;

(c) stirring into said sulfuric acid in water a quantity of said one of said group from step (a);

(d) stirring into said sulfuric acid in water a quantity of calcium chloride;

wherein said quantity of one of group (a) plus said quantity of calcium chloride equals a molar chemical equivalent of said first quantity of said acid;

(e) passing the solution of step (d) through a 10 micron filter to remove precipitates of salt formed by said metal and said acid and retaining a supernate.

US 6,331,515 B1

COLOR CHANGING LIQUID CLEANING COMPOSITION COMPRISING RED DYES

Joan Gambogi, Hillsborough; Robert Fuller, Asbury, and Jodie Berta, Dover, all of N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.

Filed Aug. 6, 2001, Appl. No. 922,894

Int. Cl. C11D *17/00*

U.S. Cl. 510—424 **4 Claims**

1. A liquid cleaning composition comprising approximately by weight:

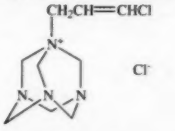
(a) 2% to 40% of at least one surfactant selected from the group consisting of anionic surfactants, ethoxylated nonionic surfactants, amine oxide surfactants, alkyl poly glucoside surfactants and zwitterionic surfactants and mixtures thereof;

(b) 0.0001% to 0.001% of and D&C Acid Dye No. 33; FD&C Red No. 40 dye

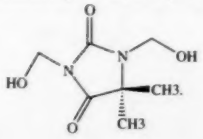
(c) 0.04% to 0.12% of sodium bisulfite

(d) 1% to 15% by weight of a solubilizing agent selected from the group consisting of a C1–C4 alkanol and/or a water soluble salt of C1–C3 substituted benzene sulfonate hydrotropes and mixtures thereof

(e) the balance being water, wherein the composition does not contain a preservative selected from the group consisting of Dowicil 75 which has the structure of:



and DMDM hydantoin having the structure of:



US 6,331,516 B1
GREASE CUTTING LIGHT DUTY LIQUID DETERGENT CONTAINING LAURYOL ETHYLENE DIAMINE TRIACETATE

Robert D'Ambrogio, Bound Brook, and Thomas Connors, Piscataway, both of N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Continuation-in-part of application No. 09/757,334, filed on Jan. 9, 2001, now Pat. No. 6,242,411. This application May 16, 2001, Appl. No. 859,084.

Int. Cl. C11D *17/00*

U.S. Cl. 510—425 **9 Claims**

1. A light duty liquid composition comprising approximately by weight:

(a) 5% to 40% of a surfactant;

(b) 0.5% to 10% of a lauryol ethylene diamine triacetate; and

(c) the balance being water, wherein the composition does not contain an ethylene diamine tetraacetic acid or a fatty acid alkanolamide, an alkali metal salt, a builder, hydroxyethylene diamine tetraacetic acid.

US 6,331,517 B1
CLEANING COMPOSITION CONTAINING A HYDROPHILIZING POLYMER

Patrick Durbut, Verviers, Belgium, assignor to Colgate Palmolive Co., Piscataway, N.J.

Filed Aug. 2, 2001, Appl. No. 920,662

Int. Cl. C11D *17/00*

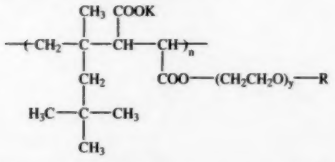
U.S. Cl. 510—426 **1 Claim**

1. A cleaning composition comprising approximately by weight:

(a) 0.1% to 10% of an anionic surfactant;

(b) 0.01% to 2% of a hydrophilizing polymer which is a maleic acid-olefin copolymer, wherein the polymer can be partially esterified by polyethylene glycol, or partially esterified by an amphiphilic moiety, or an acrylic acid polymer partially esterified by polyethylene glycol, or partially esterified by an amphiphilic moiety, and

(c) the balance being water, wherein said hydrophilizing copolymer is characterized by the formula:



wherein n is a number from 15 to 150, y is a number from 3 to 20 and R is an alkyl group having 9 to 15 car atoms and wherein the composition does not contain nonionic surfactants containing ethoxylate groups, silicon containing polymers, amino containing polymers, copolymers of N-vinylimidazole N-vinylpyrrolidone (PVPVI), or quaternized vinyl pyrrolidone/dialkylaminoalkyl acrylate or methacrylate copolymers, or polyvinyl pyridine N-oxide polymers.

US 6,331,518 B2
COMPACT CLEANER CONTAINING SURFACTANTS

Dieter Hemm, and Guenter Hellmann, both of Hilden, Germany, assignors to Henkel-Ecolab GmbH & Co. OHG, Dusseldorf, Germany

PCT No. PCT/EP97/05218, § 371 Date Mar. 24, 1999, § 102(e) Date Mar. 24, 1999, PCT Pub. No. WO98/13466, PCT Pub. Date Apr. 2, 1998

PCT Filed Sep. 23, 1997, Appl. No. 147,975

Claims priority, application Germany, Sep. 24, 1996, 196 39 118; Nov. 21, 1996, 196 48 107

Int. Cl. C11D *3/04;3/20;3/30;17/00*

U.S. Cl. 510—445 **8 Claims**

1. A method for preparing a water-containing solid detergent, the method comprising:

providing aqueous 42 to 55% lye in a quantity of 21 to 70% by weight;

mixing with the aqueous lye compound of formula (I), compound of formula (II), or a combination thereof to achieve a quantity of this compound or combination of 0.5 to 40% by weight and to form a first mixture;

formula (I) being:

$$HOCH_2CH(R^1)OR^2 \quad (I)$$

in which R^1 is a hydrogen atom or a methyl group, and R^2, independent of R^1, is a hydrogen atom, a C_{1-4} alkyl group, a group $CH_2CH(R^3)OR^4$, or a group $CH_2CH(R^5)OCH_2—CH(R^6)OR^7$, where R^3, R^5, and R^6 represent hydrogen atoms or methyl groups and R^4 and R^7 represent hydrogen atoms or C_{1-4} alkyl groups;

formula (II) being:

$$[(HOCH_2CH)(R^8)_{3-x}]NH_x \quad (II)$$

in which R^8 is a hydrogen atom or a methyl group, and x is the number 0, 1 or 2;

adding to the first mixture foam inhibitor followed by the addition of 15% to 60% by weight, based on the weight of the detergent, of a building component to form second mixture;

adding to the second mixture as a component: 0.1% to 8% by weight, based on the weight of the detergent, of paraffin oil, 1% to 20% by weight, based on the total weight of the detergent, of surfactant, 0.1% to 10% by weight, based on the total weight of the detergent, of a polyhydroxy compound, or a combination thereof; to form third mixture;

adding to the third mixture solid alkali metal hydroxide to achieve 2% to 25% by weight of the alkali metal hydroxide and to form the detergent;

wherein % by weight is based on the weight of the detergent.

US 6,331,519 B1
DETERGENCY BOOSTERS FOR DETERGENTS

Jürgen Huff, Bissersheim; Ulrich Steuerle, Heidelberg; Hubert Meixner; Beate Ehle, both of Ludwigshafen; Wolfgang Paulus, Mainz; Jürgen Alfred Lux, Niederkirchen, and Lukas Häussling, Bad Dürkheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of application No. 09/155,412, filed as application No. PCT/EP97/01512, filed on Mar. 25, 1997, now Pat. No. 6,180,590. This application May 2, 2000, Appl. No. 562,938.

Claims priority, application Germany, Mar. 26, 1996, 196 11 977

Int. Cl. C11D *3/37*

U.S. Cl. 510—475 **34 Claims**

1. A method of boosting the detergency of a detergent, comprising admixing an amine with an average pK_A of from 1 to 14 to the detergent, wherein the amine is a polymer comprising repeating units corresponding to the formula:

$$—(CH_2—CH(NH_2))—$$

which method further comprises making the amine polymer by at least partial hydrolysis of oligo/polyvinylformamides and co-polymers of vinylformamide wherein 5 to 100% of the nitrogen atoms are present in primary or secondary amino groups;

said detergent comprising at least one surfactant and at least one di-, tri-, oligo- or polycarboxylic acid or alkali metal salt, alkaline earth metal salt or ammonium salt thereof or a combination thereof.

US 6,331,520 B1

PHARMACEUTICAL COMPOSITIONS OF PEPTIDES HAVING LOW SOLUBILITY IN PHYSIOLOGICAL MEDIUM

Peter Richardson, Epsom, United Kingdom, assignor to Applied Research Systems ARS Holding NV, Switzerland

Continuation of application No. PCT/EP98/03079, filed on May 26, 1998. This application Nov. 29, 1999, Appl. No. 451,013.

Claims priority, application European Pat. Off., May 28, 1997, 97108593; Dec. 3, 1997, 97121246

Int. Cl. C07K *7/23;* A61K *38/25;38/09*

U.S. Cl. 514—2 6 Claims

1. A pharmaceutical composition comprising:

a) an LHRH peptide agonist, an LHRH peptide antagonist or a growth hormone releasing factor peptide as active ingredient;

b) nicotinamide; and

c) a physiological aqueous solution.

US 6,331,521 B1

ECHINOCANDINE DERIVATIVES WITH ANTIMICROBIAL ACTIVITY

Yasuhiro Hori, Tsukuba-gun; Yasuhisa Tsurumi, Tsukuba; Shigehiro Takase, Ishioka; Hiroshi Hatanaka, Kitasoumagun; Kazutoshi Sakamoto, Tsuchiura; Seiji Hashimoto, Tsukuba; Hidenori Ohki, Takarazuka; Takashi Tojo, Osaka; Keiji Matsuda, Takatsuki, and Kohji Kawabata, Kawanishi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP98/02168, § 371 Date Dec. 1, 1999, § 102(e) Date Dec. 1, 1999, PCT Pub. No. WO98/52967, PCT Pub. Date Nov. 26, 1998

PCT Filed May 18, 1998, Appl. No. 423,654

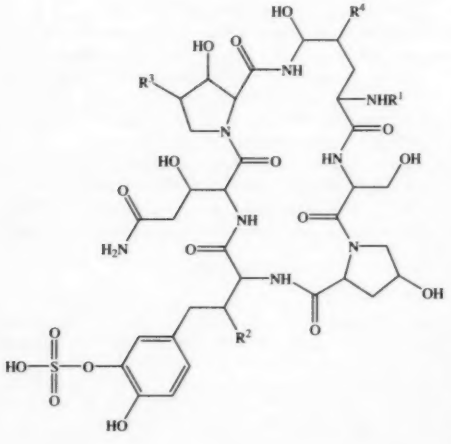
Claims priority, application Australia, May 21, 1997, PO6918

Int. Cl. A61K *38/00;* C07K *5/00;7/00;7/56*

U.S. Cl. 514—9 15 Claims

1. A polypeptide compound of the following general formula (I):

(I)



wherein

R^1 is hydrogen or acyl group,

R^2 is hydrogen or hydroxy,

R^3 is hydrogen or methyl, and

R^4 is hydrogen or hydroxy,

with proviso that

when R^4 is hydroxy, then R^2 is hydroxy,

or a salt thereof.

US 6,331,522 B1

ANTIBACTERIAL AND ANTIFUNGAL PEPTIDE

Philippe Bulet, Vendenheim; Charles Hetru, Illkirch Graffenstaden; Jules Hoffmann, Strasbourg, and Laurence Sabatier, Molsheim, all of France, assignors to Aventis CropScience SA, Lyons, France

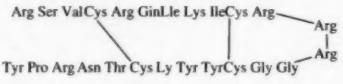
Continuation of application No. 09/125,234, filed as application No. PCT/FR97/00295, filed on Feb. 17, 1997, now Pat. No. 6,127,336. This application Mar. 13, 2000, Appl. No. 524,675.

Claims priority, application France, Feb. 16, 1996, 96 02168

Int. Cl. A61K *38/12;38/16;* C07K *1/14;4/12;5/12*

U.S. Cl. 514—10 2 Claims

1. A method for treating a bacterial or fungal infection in an animal comprising administering a peptide of the formula:



to an animal in need of such treatment.

US 6,331,523 B1

METHOD OF ENHANCING THE SURVIVAL OF RETINAL NEURONS AND TREATING OCULAR DISEASES USING FGF-5

Ivar J. Kljavin, Lafayette, and Monique La Fleur, Daly City, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation-in-part of application No. 09/041,383, filed on Mar. 12, 1998, now abandoned. This application Jan. 29, 1999, Appl. No. 240,952.

Int. Cl. A61K *38/16;38/18*

U.S. Cl. 514—12 18 Claims

1. A method of enhancing the survival of retinal cells in a mammal comprising administering a therapeutically effective amount of active FGF-5 polypeptide to said mammal.

US 6,331,524 B1

ORGAN-SPECIFIC TARGETING OF CATIONIC AMPHIPHILE / DNA COMPLEXES FOR GENE THERAPY

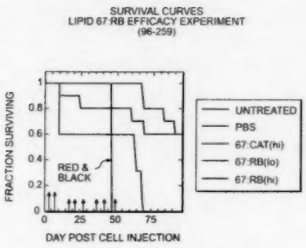
Ronald K. Scheule, Hopkinton; Rebecca G. Bagley, Natick; Simon J. Eastman, Hudson; Seng H. Cheng, Wellesley; John Marshall, Hopedale; David J. Harris, Lexington; Edward R. Lee, Natick; Craig S. Siegel, Woburn; Chau-Dung Chang, Lexington; S. Catherine Hubbard, Belmont, all of Mass.; Duane E. Johnson, Encinitas, Calif.; Daniel C. Maneval, San Diego, Calif.; H. Michael Shepard, Rancho Santa Fe, Calif., and Richard J. Gregory, Westford, Mass., assignors to Genzyme Corporation, Framingham, Mass.

Continuation of application No. 08/667,122, filed on Jun. 20, 1996, now abandoned, which is a continuation-in-part of application No. 08/545,473, filed on Oct. 19, 1995, now Pat. No. 6,071,890, which is a continuation-in-part of application No. 08/540,867, filed on Oct. 11, 1995, now Pat. No. 5,747,471, which is a continuation-in-part of application No. 08/352,479, filed on Dec. 9, 1994, now Pat. No. 5,650,096, Provisional application No. 60/004,399, filed on Sep. 27, 1995, Provisional application No. 60/004,344, filed on Sep. 26, 1995. This application Apr. 7, 1997, Appl. No. 835,213.

Int. Cl. A61K *48/00;* C12N *15/88;15/63*

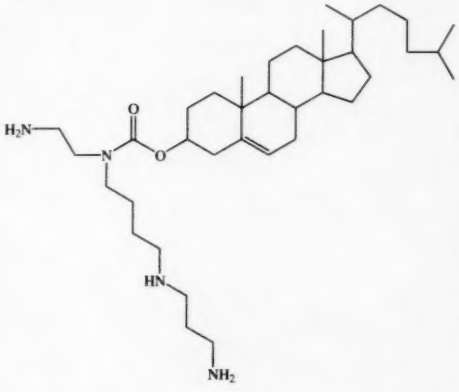
U.S. Cl. 514—44 4 Claims

1. A method of treating a tumor cell lacking an amount of functional retinoblastoma protein effective for inhibiting proliferation of said tumor cell in a mammal comprising administering to said mammal a composition comprising:



(1) a polynucleotide comprising a sequence encoding a retinoblastoma protein, and

(2) a cationic amphiphile, wherein said cationic amphiphile is



and wherein said composition is administered in an amount effective for inhibiting growth of said tumor cells.

US 6,331,525 B1

TARGETED DELIVERY OF GENES ENCODING INTERFERON

Henry C. Chiou, Encinitas, and Dennis J. Carlo, Rancho Santa Fe, both of Calif., assignors to The Immune Response Corporation, Carlsbad, Calif.

Continuation of application No. 08/819,238, filed on Mar. 17, 1997, now Pat. No. 6,069,133, which is a continuation-in-part of application No. 08/616,023, filed on Mar. 14, 1996, now abandoned. This application Aug. 23, 1999, Appl. No. 379,434.

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *48/00;* **C12N** *15/63*

U.S. Cl. 514—44 **14 Claims**

1. A method of treating hepatitis infection in a mammalian subject comprising administering to the subject a molecular complex comprising a gene encoding interferon-α releasably linked to a conjugate of a cationic agent which binds the gene and a ligand which binds to the asialoglycoprotein receptor on the surface of liver cells in the subject, wherein the gene is operably linked to genetic regulatory elements such that the gene is expressed, and the expressed interferon protein is processed and secreted from the liver cells in an amount sufficient to treat the hepatitis infection.

US 6,331,526 B1

METHOD OF INHIBITING THE PROLIFERATION AND CAUSING THE DIFFERENTIATION OF CELLS WITH IGF-1 RECEPTOR ANTISENSE OLIGONUCLEOTIDES

Renato Baserga, Ardmore; Christian Sell, Philadelphia, and Raphael Rubin, Penn Valley, all of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Division of application No. 08/880,313, filed on Jun. 20, 1997, now Pat. No. 6,274,562, which is a continuation of application No. 08/479,173, filed on Jun. 6, 1995, now Pat. No. 5,643,788, which is a continuation of application No. 08/158,761, filed on Nov. 30, 1993, now abandoned, which is a continuation-in-part of application No. 08/037,257, filed on Mar. 26, 1993, now abandoned. This application Sep. 2, 1999, Appl. No. 389,855.

This patent is subject to a terminal disclaimer.

Int. Cl. A61K *48/00;* **C12Q** *1/68;* **C07H** *21/04*

U.S. Cl. 514—44 **21 Claims**

1. An antisense oligonucleotide comprising SEQ ID NO:4.

US 6,331,527 B1

PROMOTER SMOOTH MUSCLE CELL EXPRESSION

Michael S. Parmacek, Bryn Mawr, Pa., and Julian Solway, Glencoe, Ill., assignors to Arch Development Corporation, Chicago, Ill.

Division of application No. 08/726,807, filed on Oct. 7, 1996, Provisional application No. 60/004,868, filed on Oct. 5, 1995. This application Nov. 1, 1999, Appl. No. 431,349.

Int. Cl. A61K *31/70;* **A61F** *2/06;* **C07H** *21/04;* **C12N** *15/85;15/86*

U.S. Cl. 514—44 **75 Claims**

1. A method for providing a molecule of interest to a blood vessel in a mammal comprising:

(a) providing a bioprosthesis seeded with a smooth muscle cell transfected with a nucleic acid segment comprising an SM22α promoter region operably linked to a DNA sequence encoding said molecule of interest that is other than mouse SM22α, wherein the SM22α promoter region has a maximum of 441 bases and comprises:

(i) bases 900–1340 of SEQ ID NO:1;

(ii) a sequence hybridizing with the complement of SEQ ID NO:1 under hybridizing conditions comprising 0.02M–0.15M sodium chloride at a temperature of 50° C. to 70° C.;

(iii) an oligomer comprising SME1 (SEQ ID NO:21), SME2 (SEQ ID NO:23), SME3 (SEQ ID NO:25), SME4 (SEQ ID NO:27), SME5 (SEQ ID NO:31), or SME6 (SEQ ID NO:33); or

(iv) a sequence that hybridizes with the complement of SME1 (SEQ ID NO:21), SME2 (SEQ ID NO:23), SME3 (SEQ ID NO:25), SME4 (SEQ ID NO:27), SME5 (SEQ ID NO:31), or SME6 (SEQ ID NO:33) under hybridizing conditions comprising 0.02M–0.15M sodium chloride at a temperature of 50° C. to 70° C.;

(b) placing said seeded prosthesis in said blood vessel; and

(c) obtaining expression of said molecule in said blood vessel.

US 6,331,528 B1

METHOD FOR TREATMENT IN GENE THERAPY AND USE OF GUANINE DERIVATIVE THEREFOR

Nobukazu Ono, Kawasaki, Japan, assignor to Ajinomoto Co., Inc., Tokyo, Japan

Filed Apr. 25, 2000, Appl. No. 557,327

Int. Cl. A61K *31/70;* **C12N** *15/00;* **A01N** *63/00*

U.S. Cl. 514—44 **10 Claims**

1. A method of inhibiting cell growth comprising introducing and expressing an isolated thymidine kinase gene in a cell; and

administering a (−)-9-[1'S,2'R-bis(hydroxymethyl)cyclopropan-1'-yl]methylguanine, a pharmaceutically acceptable salt thereof or ester thereof in an amount sufficient to inhibit cell growth.

US 6,331,529 B1

METHOD OF PROMOTING MUCOSAL HYDRATION WITH CERTAIN URIDINE, ADENINE AND CYTIDINE DIPHOSPHATES AND ANALOGS THEREOF

Benjamin R. Yerxa; Janet L. Rideout, both of Raleigh, and Arthur C. Jones, Durham, all of N.C., assignors to Inspire Pharmaceuticals, Inc., Burham, N.C.

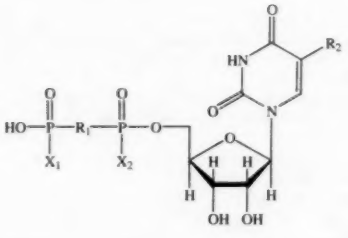
Provisional application No. 60/121,754, filed on Feb. 26, 1999. This application Feb. 25, 2000, Appl. No. 512,867.

Int. Cl. A61K *31/70*

U.S. Cl. 514—47 **12 Claims**

1. A method of stimulating mucosal hydration in a mammal in need thereof comprising administering an effective hydration increasing amount of a compound of Formulas I, II, III or IV:

Formula I



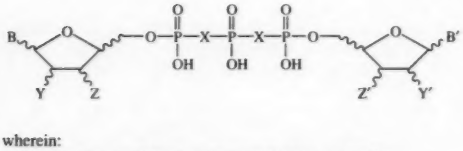
wherein:

X_1 and X_2 are each independently either O^- or S^-;

R_1 is O, imido, methylene or dihalomethylene;

R_2 is selected from the group consisting of H, halo, alkyl, substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, alkoxyl, nitro and azido;

Formula II



wherein:

X is oxygen, methylene, difluoromethylene, or imido;

B and B' are each independently a purine residue or a pyrimidine residue linked through the 9- or 1- position, respectively;

Z=OH or N_3;

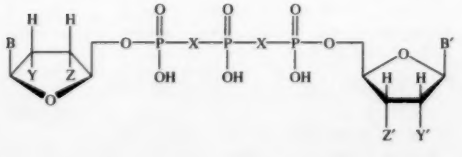
Z'=OH or N_3;

Y=H or OH;

Y'=H or OH;

provided that when Z is N_3, Y is H or when Z' is N_3, Y' is H;

Formula IIa



wherein:

X=O;

Z, Z', Y, and Y'=OH;

B and B' are defined in Formulas IIc and IId;

X=O;

Z, Z', Y, and Y'=OH;

B=uracil;

B' is defined in Formulas IIc and IId; or

X=O;

Z, Y, and Y'=OH;

Z'=H;

B=uracil;

B' is defined in Formulas IIc and IId; or

X=O;

Z and Y=OH;

Z'=N_3;

Y'=H;

B=uracil;

B'=thymine; or

X=O;

Z and Z'=N_3;

Y and Y'=H;

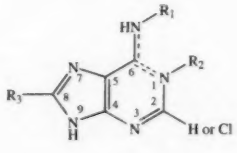
B and B'=thymine; or

X=CH_2, CF_2, or NH;

Z, Z', Y, and Y'=OH;

B and B' are defined in Formulas IIc and IId;

Formula IIc



wherein

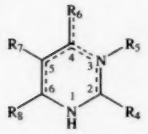
R_1 is hydrogen, C_{1-8}alkyl, C_{3-6}cycloalkyl, phenyl, or phenyloxy; wherein at least one hydrogen of said C_{1-8}alkyl, phenyl, phenyloxy, is optionally substituted with a moiety selected from the group consisting of halogen, hydroxy, C_{1-4}alkoxy, C_{1-4}alkyl, C_{6-10}aryl, carboxy, cyano, nitro, sulfonamido, sulfonate, phosphate, sulfonic acid, amino, C_{1-4} alkylamino, di-C_{1-4} alkylamino wherein said alkyl groups are optionally linked to form a heterocycle, ω-A(alkyl)CONH(alkyl)-, and ω-A(alkyl)NHCO(alkyl)-, wherein A is amino, mercapto, hydroxy or carboxyl;

R_2 is O or is absent; or

R_1 and R_2 taken together form a 5-membered fused imidazole ring optionally substituted on the 4- or 5- positions of the etheno moiety with C_{1-4}alkyl, phenyl or phenyloxy, wherein at least one hydrogen of said C_{1-4}alkyl, phenyl, phenyloxy, is optionally substituted with a moiety selected from the group consisting of halogen, hydroxy, C_{1-4}alkoxy, C_{1-4}alkyl, C_{6-10}aryl, C_{7-12}arylalkyl, carboxy, cyano, nitro, sulfonamido, sulfonate, phosphate, sulfonic acid, amino, C_{1-4} alkylamino, and di-C_{1-4} alkylamino wherein said dialkyl groups are optionally linked to form a heterocycle; and

R_3 is hydrogen, NH_2, C_{1-8}alkyl, C_{3-6} cycloalkyl, phenyl; or phenyloxy; wherein at least one hydrogen of said NH_2, C_{1-8}alkyl, phenyl, or phenyloxy, is optionally substituted with a moiety selected from the group consisting of halogen, hydroxy, C_{1-4}alkyl, C_{6-10}aryl, C_{7-12}arylalkyl, C_{1-4}alkoxy, C7-12arylalkyloxy, C_{1-4}alkylthio, phenylthio C_{7-12}arylalkylthio, carboxy, cyano, nitro, sulfonamido, sulfonate, phosphate, sulfonic acid, amino, C_{1-4} alkylamino, phenylamino, C_{7-12}arylalkyamino, di-C_{1-4} alkyl amino wherein said dialkyl groups are optionally linked to form a heterocycle, ω-A(alkyl)CONH(alkyl)B-, and ω-A(alkyl)NHCO(alkyl)B-, wherein A and B are independently amino, mercapto, hydroxy or carboxyl;

Formula IId



wherein:

R_4 is hydrogen, hydroxy, mercapto, amino, cyano, C_{7-12}arylalkoxy, C_{1-6} alkylthio, C_{1-6} alkoxy, C_{1-6} alkylamino or diC_{1-4}alkylamino, wherein the alkyl groups are optionally linked to form a heterocycle;

R_5 is hydrogen, acetyl, benzoyl, C_{1-6} alkyl, phenyloxy, C_{1-5} alkanoyl, aroyl, or sulphonate;

R_6 is hydroxy, mercapto, C_{1-4}alkoxy, C_{7-12}arylalkoxy, C_{1-6}alkylthio, amino, S-phenyl, C_{1-5} disubstituted amino, triazolyl, C_{1-6}alkylamino, or di-C_{1-4}alkylamino wherein said dialkyl groups are optionally linked to form a heterocycle or linked to N^3 to form a substituted ring; or

R_5 and R_6 taken together form a 5-membered fused imidazole ring between positions 3 and 4 of the pyrimidine ring and form a 3,N^4-ethenocytosine derivative, wherein said etheno moiety is optionally substituted on the 4- or 5-positions with C_{1-4} alkyl; phenyl; or phenyloxy; wherein at least one hydrogen of said C_{1-4}alkyl; phenyl or phenyloxy is optionally substituted with a moiety selected from the group consisting of halogen, hydroxy, C_{1-4}alkoxy, C_{1-4}-alkyl, C_{6-10}aryl, C_{7-12}arylalkyl, carboxy, cyano, nitro, sulfonamido, sulfonate, phosphate, sulfonic acid, amino, C_{1-4} alkylamino, and di-C_{1-4} alkylamino wherein said dialkyl groups are optionally linked to form a heterocycle;

R_7 is hydrogen, hydroxy, cyano, nitro, or C_{2-8}alkenyl; wherein said alkenyl moiety is optionally linked through an oxygen to form a ring, wherein at least one hydrogen of said alkenyl moiety on the carbon adjacent to said oxygen is optionally substituted with C_{1-6}alkyl, phenyl, substituted C_{2-8}alkynyl, halogen, substituted C_{1-4}alkyl, CF_3, C_{2-3} alkenyl, C_{2-3} alkynyl, allylamino, bromovinyl, ethyl propenoate, or propenoic acid; or

R_6 and R_7 together form a 5 or 6-membered saturated or unsaturated ring bonded through N or O at R_6, such ring optionally contains substituents that themselves contain functionalities; provided that when R_8 is amino or substituted amino, R_7 is hydrogen; and

R_8 is hydrogen, amino or di-C_{1-4}alkylamino, C_{1-4}alkoxy, C_{7-12}arylalkoxy, C_{1-4}alkylthio, C_{7-12}arylalkylthio,carboxamidomethyl, carboxymethyl, methoxy, methylthio, phenoxy or phenylthio.

US 6,331,530 B1

HYDROPHILIC CARRIER FOR PHOTOSENSITIZERS THAT CLEAVES WHEN THEY CATALYZE THE FORMATION OF SINGLET OXYGEN

Ronald Breslow, Englewood, N.J.; Anja Ruebner, Philadelphia, Pa., and Zhiwei Yang, Pasadena, Calif., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Jul. 13, 1999, Appl. No. 352,529
Int. Cl. A61K *31/715;* **C08B** *37/16*
U.S. Cl. 514—58 **11 Claims**

1. A composition of matter comprising two β -cyclodextrin molecules and a cleavable linker joining each such β-cyclodextrin, wherein the cleavable linker comprises a carbon-carbon double bond substituted on one or both ends by an electron rich atom, and the cleavable linker is cleavable by singlet oxygen.

US 6,331,531 B1

METHOD FOR CONTROLLING HARMFUL ORGANISMS IN CROPS OF USEFUL PLANTS

Manfred Kern, Lörzweiler, Germany, assignor to Aventis CropScience GmbH, Frankfurt am Main, Germany

Filed Jun. 3, 1999, Appl. No. 325,148
Claims priority, application Germany, Jun. 5, 1998, 198 25 333
Int. Cl. A01N *43/00;43/653;37/08;55/04;63/00*
U.S. Cl. 514—93 **15 Claims**

1. A method for controlling harmful organisms in genetically modified cotton plants which contain a gene derived from *Bacillus thuringiensis* which encodes and expresses an insecticidally active protein, which comprises applying an insecticidally effective amount of one or more compounds from the following groups a–f to the plants, to their seeds or propagation stock and/or to the area in which they are cultivated:

a) Organophosphorus compounds: triazophos (726), monocrotophos (502), methamidophos (479), chlorpyrifos (137), parathion (551), acephate (4), profenofos (594), malathion (448), heptenophos (395);

b) Pyrethroids: tralomethrin (718), cypermethrin (183), cyhalothrin (179), lambdacyhalothrin (180), deltamethrin (204), fenvalerates (319), (alpha)-cypermethrin (183/184), cyfluthrin (176), fenpropathrin (312), etofenprox (292);

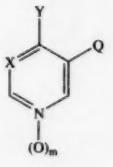
c) Carbamates: aldicarb (16), bendiocarb (56), carbaryl (106), carbofuran (109), formetanates (369), pirimicarb (583)

d) Biopesticides: *Bacillus thuringiensis* (46, 47), granuloses and nuclear polyhedrosis viruses, *Beauveria bassiana* (52), *Beauveria brogniartii* (53), baculoviruses, such as *Autographa california;*

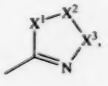
e) Others: endosulfan (270), abamectin (1), XDE-105 (754), diafenthiuron (208), fipronil (323), chlorfenapyr (123), tebufenocides (679), fenazaquin (301), imidacloprid (418), triazamates (724), fentin (317), amitraz (22), MK-242

f) 4-Haloalkyl-3heterocyclylpyridines and 4haloalkyl-5-heterocyclylpyrimidines of the formula (1), if appropriate also in the form of their salts,

(I)



where the symbols and indices have the following meanings:
Y is halo-C_1–C_6-alkyl;
X is CH or N;
m is 0 or 1;
Q is a 5-membered heterocycic group



in which

a)	X^1 = W,	X^2 = NR^a,	X^3 = CR^bR^1	or
b)	X^1 = NR^a,	X^2 = CR^bR^1,	X^3 = W	or
c)	X^1 = V,	X^2 = CR^aR^1,	X^3 = NR^b	or
d)	X^1 = V,	X^2 = CR^aR^2,	X^3 = CR^bR^3	or
e)	X^1 = V,	X^2 = CR^4R^5,	X^3 = CR^6R^7	or
f)	X^1 = NR^a,	X^2 = CR^bR^1,	X^3 = NR^a;	

R^a and R^b together are a bond
V is oxygen, sulfur or NR^9;

W is oxygen or sulfur;

R^1 is hydrogen,

$(C_1–C_{20})$-alkyl, $(C_2–C_{20})$-alkenyl, $(C_2–C_{20})$-alkynyl, $(C_3–C_8)$-cycloalkyl,

$(C_4–C_8)$-cycloalkenyl, $(C_6–C_8)$-cycloalkynyl,

where the six last-mentioned radicals are optionally substituted by one or more radicals from the group

halogen, cyano, nitro, hydroxyl, $—C(=W)R^{10}$, $—C(=NOR^{10})R^{10}$, $—C(=NNR^{10}{}_2)R^{10}$, $—C(=W)OR^{10}$, $—C(=W)NR^{10}{}_2$, $—OC(=W)R^{10}$, $—OC(=W)OR^{10}$, $—NR^{10}C(=W)NR^{10}$, $—N[C(=W)R^{10}]_2$, $—NR^{10}C(=W)OR^{10}$, $—C(=W)R^{10}—NR^{10}{}_2$, $—C(=W)NR^{10}—NR^{10}[C(=W)R^{10}]$, $—NR^{10}—C(=W)NR^{10}{}_2$, $—NR^{10}—R^{10}C(=W)R^{10}$, $—NR^{10}—N[C(=W)R^{10}]_2$, $—N[(C=W)R^{10}]—NR^{10}{}_2$, $—NR^{10}—NR^{10}[(C=W)R^{10}]$, $—NR^{10}—NR^{10}[(C=W)WR^{10}]$, $—NR^{10}—R^{10}[(C=W)NR^{10}{}_2]$, $—NR^{10}(C=NR^{10})R^{10}$, $—NR^{10}(C=NR^{10})NR^{10}{}_2$, $—O—NR^{10}{}_2$, $—O—NR^{10}(C=W)R^{10}$, $—SO_2NR^{10}{}_2$, $—NR^{10}SO_2R^{10}$, $—SO_2OR^{10}$, $—OSO_2R^{10}$, OR^{10}, $—NR^{10}{}_2$, $—SR^{10}$, $—SiR^{10}{}_3$, $—ScR^{10}$, $—PR^{10}{}_2$, $—P(=W)R^{10}{}_2$, $—SOR^{10}$, $—SO_2R^{10}$, $—PW_2R^{10}{}_2$, $—PW_3R^{10}{}_2$, aryl and heterocyclyl,

the two last-mentioned radicals optionally being substituted by one or more radicals from the group

$(C_1–C_6)$-alkyl, $(C_2–C_6)$-alkenyl, $(C_2–C_6)$-alkynyl, $(C_3–C_8)$-cycloalkyl, $(C_4–C_8)$ cycloalkenyl, $(C_6–C_8)$-cycloalkynyl,

$(C_1–C_6)$-haloalkyl, $(C_2–C_6)$-haloalkenyl, $(C_2–C_6)$-haloalkynyl, halogen, $—OR^{10}$, $NR^{10}{}_2$, $—SR^{10}$, $—SiR^{10}{}_3$, $—C(=W)R^{10}$, $—C(=W)OR^{10}$, $—C(=W)NR^{10}{}_2$, $—SOR^{10}$, $—SO_2R^{10}$, nitro, cyano and hydroxyl,

aryl,

which is optionally substituted by one or more radicals from the group

$(C_1–C_6)$-alkyl, $(C_2–C_6)$-alkenyl, $(C_2–C_6)$-alkynyl, $(C_3–C_8)$-cycloalkyl, $(C_4–C_8)$-cycloalkenyl and $(C_6–C_8)$-cycloalkynyl,

where these six abovementioned radicals are optionally substituted by one or more radicals from the group

halogen, cyano, nitro, $—C(=W)R^{10}$, $—C(=W)OR^{10}$, $—C(=W)NR^{10}{}_2$, $—OR^{10}$, $—NR^{10}{}_2$, $—SR^{10}$, $—SOR^{10}$ and $—SO_2R^{10}$,

halogen, cyano, nitro, $—C(=W)R^{10}$, $—C(=NOR^{10})R^{10}$, $—C(=NNR^{10}{}_2)R^{10}$, $—C(=W)OR^{10}$, $—C(=W)NR^{10}{}_2$, $—OC(=W)R^{10}$, $—OC(=W)OR^{10}$, $—NR^{10}C(=W)R^{10}$, $—N[C(=W)R^{10}]_2$, $—NR^{10}C(=W)OR^{10}$, $—OR^{10}$, $—NR^{10}{}_2$, $—SR^{10}$, $SiR^{10}{}_3$, $—PR^{10}{}_2$, $—SOR^{10}$, $—SO_2R^{10}$, $—PW_2R^{10}{}_2$ and $—PW_3R^{10}{}_2$,

heterocyclyl,

which is optionally substituted by one or more radicals from the group

$(C_1–C_6)$-alkyl, $(C_2–C_6)$-alkenyl, $(C_2–C_6)$-alkynyl, $(C_3–C_8)$-cycloalkyl, $(C_4–C_8)$-cycloalkenyl and $(C_6–C_8)$-cycloalkynyl,

where the six abovementioned radicals are optionally substituted by one or more radicals from the group

cyano, nitro, halogen, $—C(=W)R^{10}$, $—C(=W)OR^{10}$, $—C(=W)NR^{10}{}_2$, $—NR^{10}C(=W)R^{10}$, $—N[C(=W)R^{10}]_2$, $—OC(=W)R^{10}$, $—OC(=W)OR^{10}$, $—OR^{10}$, $—NR^{10}{}_2$, $—SR^{10}$, $—SOR^{10}$ and $—SO_2R^{10}$,

halogen, cyano, nitro, $—C(=W)R^{10}$, $C(=W)OR^{10}$, $—C(=W)NR^{10}{}_2$, $—OC(=W)R^{10}$, $—OR^{10}$, $—NR^{10}{}_2$, $—SR^{10}$, $—SOR^{10}$ and $—SO_2R^{10}$,

$—OR^{10}$, $—NR^{10}{}_2$, $—SR^{10}$, $—SOR^{10}$, $—SO_2R^{10}$, $—C(=W)R^{10}$, $—C(=NOR^{10})^{10}$, $—C(=NNR^{10}{}_2)R^{10}$, $—C(=W)OR^{10}$, $—C(=W)NR^{10}{}_2$, $—OC(=W)R^{10}$, $—OC(=W)OR^{10}$, $—NR^{10}C(=W)R^{10}$, $—N[C(=W)R^{10}]_2$, $—NR^{10}C(=W)OR^{10}$, $—C(=W)NR^{10}—NR^{10}{}_2$, $—C(=W)NR^{10}—NR^{10}[C(=W)R^{10}]$, $—NR^{10}—C(=W)NR^{10}{}_2$, $—NR^{10}—NR^{10}C(=W)R^{10}$, $—NR^{10}—NC(=W)R^{10}{}_2$, $—N(C=W)R^{10}—NR^{10}{}_2$, $—NR^{10}—NR^{10}[(C=W)R^{10}]$, $—NR^{10}—N^{10}[(C=W)WR^{10}]$, $—NR^{10}—NR^{10}[(C=W)NR^{10}{}_2]$, $—NR^{10}(C=NR^{10})R^{10}$, $—NR^{10}(C=NR^{10})NR^{10}{}_2$, $—O—NR^{10}{}_2$, $—O—NR^{10}(C=W)R^{10}$, $—SO_2NR^{10}{}_2$, $—NR^{10}SO_2R^{10}$, $—SO_2OR^{10}$, $—OSO_2R^{10}$, $—SC(=W)R^{10}$, $—SC(=W)OR^{10}$, $—SC(=W)R^{10}$, $—PR^{10}{}_2$, $—PW_2R^{10}{}_2$, $—PW_3R^{10}{}_2$, $SiR^{10}{}_3$ or halogen;

R^2 and R^3 independently of one another have the definitions given in R^1;

R^2 and R^3 together form a 5- to 7-membered ring which may be partially or fully unsaturated and may be interrupted by one or more atoms from the group nitrogen, oxygen and sulfur, the oxygen atoms not being directly adjacent to one another, and the ring optionally being substituted by one or more, but at most 5, radicals R^1;

R^4 and R^6 independently of one another have the definitions given in R^1;

R^4 and R^6 together form a 4- to 7-membered ring which may be partially or fully unsaturated and may be interrupted by one or more atoms from the group nitrogen, oxygen and sulfur, the oxygen atoms not being directly adjacent to one another, and the ring optionally being substituted by one or more, but at most 5, radicals R^1;

R^5 and R^7 independently of one another are hydrogen,

$(C_1–C_{20})$-alkyl, $(C_2–C_{20})$-alkenyl, $(C_2–C_{20})$-alkynyl, $(C_3–C_8)$-cycloalkyl, $(C_4–C_8)$-cycloalkenyl, $(C_6–C_8)$-cycloalkynyl,

where the six last-mentioned radicals are optionally substituted by one or more radicals from the group

halogen, cyano, nitro, hydroxyl, $—C(=W)R^{10}$, $—C(=NOR^{10})R^{10}$, $—C(=NNR^{10})R^{10}$, $—C(=W)OR^{10}$, $—C(=W)NR^{10}{}_2$, $—OC(=W)R^{10}$, $—OC(=W)OR^{10}$, $—N^{10}C(=W)R^{10}$, $—N[C(=W)R^{10}]_2$, $—NR^{10}C(=W)OR^{10}$, $—C(=W)NR^{10}—NR^{10}{}_2$, $—C(=W)NR^{10}—NR^{10}[C(=W)R^{10}]$, $—NR^{10}—C(=W)NR^{10}{}_2$, $—NR^{10}—NR^{10}C(=W)R^{10}$, $—NR^{10}—N[C(=W)R^{10}]_2$, $—N[(C=W)R^{10}]—NR^{10}{}_2$, $—NR^{10}—NR^{10}[(C=W)R^{10}]$, $—NR^{10}—NR^{10}[(C=W)WR^{10}]$, $—NR^{10}—NR^{10}[(C=W)NR^{10}{}_2]$, $—NR^{10}(C=NR^{10})R^{10}$, $—NR^{10}(C=NR^{10})NR^{10}{}_2$, $—O—NR^{10}{}_2$, $—O—NR^{10}(C=W)R^{10}$, $—OR^{10}$, $—NR^{10}{}_2$, $—SR^{10}$, $—SiR^{10}{}_3$, $—ScR^{10}$, $—PR^{10}{}_2$, $—P(=W)R^{10}{}_2$, $—SOR^{10}$, $—SO_2R^{10}$, $—PW_2R^{10}{}_2$, $—PW_3R^{10}{}_2$, aryl and heterocyclyl,

of which the two mentioned last are optionally substituted by one or more radicals from the group

$(C_1–C_6)$-alkyl, $(C_2–C_6)$-alkenyl, $(C_2–C_6)$-alkynyl, $(C_3–C_8)$-cycloalkyl, $(C_4–C_8)$-cycloalkenyl, $(C_6–C_8)$-cycloalkynyl,

$(C_1–C_6)$-haloalkyl, $(C_2–C_6)$-haloalkenyl, $(C_2–C_6)$-haloalkynyl, halogen, $—OR^{10}$, $—NR^{10}{}_2$, $—SR^{10}$, $—SiR^{10}{}_3$, $—C(=W)R^{10}$, $—C(=W)OR^{10}$, $—C(=W)NR^{10}{}_2$, $—SOR^{10}$, $—SO_2R^{10}$, nitro, cyano and hydroxyl,

aryl,

which is optionally substituted by one or more radicals from the group

$(C_1–C_6)$-alkenyl, $(C_2–C_6)$-alkynyl, $(C_3–C_8)$-cycloalkyl, $(C_4–C_8)$-cycloalkenyl and $(C_6–C_8)$-cycloalkynyl,

where these six mentioned radicals are optionally substituted by one more radicals from the group
halogen, cyano, nitro, —C(=W)R^{10}, —C(=W)OR^{10}, —C(=W)$NR^{10}{}_2$, OR^{10}, —$NR^{10}{}_2$, —SR^{10}, —SOR^{10} and
—SO_2R^{10},
halogen, cyano, nitro, —C(=W)R^{10}, —C(=NOR^{10},)R^{10}, —C(=$NNR^{10}{}_2$)R^{10}, —C(=W)OR^{10}, —C(=W)$NR^{10}{}_2$, —OC(=W)R^{10}, —OC(=W)OR^{10}, —$NR^{10}C$(=W)R^{10}, —N[C(=W)R^{10}]$_2$, —NR^{10} C(=W)OR^{10}, —OR^{10}, —$NR^{10}{}_2$, —SR^{10}, —$SiR^{10}{}_3$, —$PR^{10}{}_2$, —SOR^{10}, —SO_2R^{10}, —$PW_2R^{10}{}_2$ and —$PW_3R^{10}{}_2$,
pyridyl,
which is optionally substituted by one or more radicals from the group
(C_1–C_6)-alkenyl, (C_2–C_6)-alkynyl, (C_3– C_8)-cycloalkyl, (C_4–C_8)-cycloalkenyl and (C_6–C_8)-cycloalkynyl,
where the six abovementioned radicals are optionally substituted by one or more radicals from the group
cyano, nitro, halogen, —C(=W)R^{10}, —C(=W)OR^{10}, —C(=W)$NR^{10}{}_2$, —OR^{10}, —$NR^{10}{}_2$, —SR^{10}, —SOR^{10} and
—SO_2R^{10},
halogen, cyano, nitro, —C(=W)R^{10}, —C(=W)OR^{10}, —C(=W)$NR^{10}{}_2$, —OC(=W)R^{10}, —OR^{10}, —$NR^{10}{}_2$, —SR^{10}, —SOR^{10} and —SO_2R^{10}, —C(=W)R^{10}, —C(=NOR^{10})R^{10}, —C(=$NNR^{10}{}_2$)R^{10}, —C(=W)OR^{10}, —C(=W)$NR^{10}{}_2$ or halogen;

R^4 and R^5 together form a 4- to 7-membered ring which may be partially unsaturated and may be interrupted by one or more atoms from the group nitrogen, oxygen and sulfur, oxygen atoms not being directly adjacent to one another, and the ring optionally being substituted by one or more, but at most 5, radicals R^1;

R^4 and R^5 together form one of the groups =O, =S or =N—R^9;

R^6 and R^7 together form a 5- to 7-membered ring which may be partially unsaturated and may be interrupted by one or more atoms from the group nitrogen, oxygen and sulfur, oxygen atoms not being directly adjacent to one another, and the ring optionally being substituted by one or more, but at most 5, radicals R^1;

R^6 and R^7 together form one of the groups =O, =S or =N-R^9;

R^8 is hydrogen,
(C_1–C_6)-alkyl, (C_2–C_6)-alkenyl, (C_2–C_6)-alkynyl, (C_3– C_8)-cycloalkyl, (C_4–C_8)-cycloalkenyl, (C_3–C_8)-cycloalkyl-(C_1– C_4)-alkyl, (C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkyl, (C_3– C_8)-cycloalkyl-(C_2–C_4)-alkenyl, (C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkenyl, (C_1– C_6)-alkyl-(C_3–C_8)-cycloalkyl, (C_2–C_6)-alkenyl-(C_3–C_8)-cycloalkyl, (C_2–C_6)-alkynyl-(C_3–C_8)-cycloalkyl, (C_1–C_6)-alkyl-(C_4– C_8)-cycloalkenyl, (C_2–C_6)-alkenyl-(C_4–C_8)-cycloalkenyl,
where the fourteen last-mentioned radicals are optionally substituted by one or more radicals from the group
halogen, cyano, nitro, hydroxyl, thio, amino, formyl, (C_1– C_6)-alkoxy, (C_2–C_6)-alkenyloxy, (C_2–C_6)-alkynyloxy, (C_1– C_6)-haloalkyloxy, (C_2–C_6)-haloalkenyloxy, (C_2– C_6)-haloalkynyloxy, (C_3–C_8)-cycloalkoxy, (C_4– C_8)-cycloalkenyloxy, (C_3–C_8)-halocycloalkoxy, (C_4– C_8)-halocycloalkenyloxy, (C_3–C_8)-cycloalkyl-(C_1–C_4)-alkoxy, (C_4– C_8)-cycloalkenyl(C_1–C_4)-alkoxy, (C_3–C_8)-cycloalkyl-(C_2–C_4)-alkenyloxy, (C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkenyloxy, (C_1– C_6)-alkyl-(C_3–C_8)-cycloalkoxy, (C_2–C_6)-alkenyl-(C_3– C_8)-cycloalkoxy, (C_2–C_6)-alkynyl-(C_3–C_8)-cycloalkoxy, (C_1– C_6)-alkyl-(C_4–C_8)-cycloalkenyloxy, (C_2–C_6)-alkenyl-(C_4— C_8)-cycloalkenyloxy, (C_1–C_4)-alkoxy-(C_1–C_6)-alkoxy, (C_1–C_4)-alkoxy-(C_2–C_6)-alkenyloxy, carbamoyl, (C_1–C_6)-mono- or dialkylcarbamoyl, (C_1–C_6)-mono- or dihaloalkylcarbamoyl,
(C_3–C_8)-mono- or dicycloalkylcarbamoyl, (C_1– C_6)-alkoxycarbonyl, (C_3–C_8)-cycloalkoxycarbornyl, (C_1–C_6)-alkanoyloxy, (C_3–C_8)-cycloalkanoyloxy, (C_1– C_6)-haloalkoxycarbonyl, (C_1–C_6)-haloalkanoyloxy, (C_1– C_6)-alkaneamido, (C_1–C_6)-haloalkaneamido, (C_2– C_6)-alkeneamido, (C_3–C_8)-cycloalkaneamido, (C_3– C_8)-cycloalkyl-(C_1–C_4)-alkaneamido, (C_1–C_6)-alkylthio, (C_2–C_6)-alkenylthio,
(C_2–C_6)-alkynylthio, (C_1–C_6)-haloalkylthio, (C_2– C_6)-haloalkenylthio, (C_2–C_6)-haloalkynylthio, ((C_3– C_8)-cycloalkylthio, (C_4–C_8)-cycloalkenylthio, (C_3– C_8)-halocycloalkylthio, (C_4–C_8)-halocycloalkenylthio, (C_3–C_8)-cycloalkyl-(C_1–C_4)-alkylthio, (C_4–C_8)-cycloalkenyl-(C_1– C_4)-alkylthio, (C_3–C_8)-cycloalkyl-(C_2–C_4)-alkenylthio, (C_4– C_8)-cycloalkenyl-(C_1–C_4)-alkenylthio, (C_1–C_6)-alkyl-(C_3– C_8)-cycloalkylthio, (C_2–C_6)-alkenyl-(C_3–C_8)-cycloalkylthio, (C_2– C_6)-alkynyl-(C_3–C_8)-cycloalkylthio, (C_1–C_6)-alkyl-(C_4– C_8)-cycloalkenylthio, (C_2–C_6)-alkenyl-(C_4–C_8)-cycloalkenylthio,
(C_1–C_6)-alkylsulfinyl, (C_2–C_6)-alkenylsulfinyl, (C_2– C_6)-alkynylsulfinyl, (C_1–C_6)-haloalkylsulfinyl, (C_2– C_6)-haloalkenylsulfinyl, (C_2–C_6)-haloalkynylsulfinyl, (C_3–C_8)-cycloalkylsulfinyl, (C_4–C_8)-cycloalkenylsulfinyl, (C_3– C_8)-halocycloalksulfinyl, (C_4–C_8)-halocycloalkenylsulfinyl, (C_3– C_8)-cycloalkyl-(C_1–C_4)-alkylsulfinyl, (C_4–C_8)-cycloalkenyl-(C_1– C_4)-alkylsulfinyl, (C_3–C_8)-cycloalkyl-(C_2–C_4)-alkenylsulfinyl,
(C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkenylsulfinyl, (C_1– C_6)-alkyl-(C_3–C_8)-cycloalkylsulfinyl, (C_2–C_6)-alkenyl-(C_3–C_8)-cycloalkylsulfinyl, (C_2–C_6)-alkynyl-(C_3–C_8)-cycloalkylsulfinyl, (C_1–C_6)-alkyl-(C_4–C_8)-cycloalkenylsulfinyl, (C_2– C_6)-alkenyl-(C_4–C_8)-cycloalkenylsulfinyl, (C_1–C_6)-alkylsulfonyl, (C_2– C_6)-alkenylsulfonyl, (C_2–C_6)-alkynylsulfonyl, (C_1– C_6)-haloalkylsulfonyl, (C_2–C_6)-haloalkenylsulfonyl, (C_2–C_6)-haloalkynylsulfonyl, (C_3–C_8)-cycloalkylsulfonyl, (C_4– C_8)-cycloalkenylsulfonyl, (C_3–C_8)-halocycloalkylsulfonyl, (C_4– C_8)-halocycloalkenylsulfonyl, (C_3–C_8)-cycloalkyl-(C_1– C_4)-alkylsulfonyl, (C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkylsulfonyl, (C_3– C_8)-cycloalkyl-(C_2–C_4)-alkenylsulfonyl, (C_4– C_8)-cycloalkenyl-(C_1–C_4)-alkenylsulfonyl, (C_1–C_6)-alkyl-(C_3– C_8)-cycloalkylsulfonyl, (C_2–C_6)-alkenyl-(C_3–C_8)-cycloalkylsulfonyl,
(C_2–C_6)-alkynyl-(C_3–C_8)-cycloalkylsulfonyl, (C_1–C_6)-alkyl-(C_4– C_8)-cycloalkenylsulfonyl, (C_2–C_6)-alkenyl-(C_4– C_8)-cycloalkenylsulfonyl, (C_1–C_6)-alkylamino, (C_2– C_6)-alkenylamino, (C_2–C_6)-alkynylamino, (C_1–C_6)-haloalkylamino,
(C_2–C_6)-haloalkenylamino, (C_2–C_6)-haloalkynylamino, (C_3– C_8)-cycloalkylamino, (C_4–C_8)-cycloalkenylamino, (C_3– C_8)-halocycloalkamino, (C_4–C_8)halocycloalkenylamino, (C_3– C_8)-cycloalkyl-(C_1–C_4)-alkylamino, (C_4–C_8)-cycloalkenyl-(C_1– C_4)-alkylamino, (C_3–C_8)-cycloalkyl-(C_2–C_4)-alkenylamino, (C_4– C_8)-cycloalkenyl-(C_1–C_4)-alkenylamino, (C_1–C_6)-alkyl-(C_3– C_8)-cycloalkylamino, (C_2–C_6)-alkenyl-(C_3–C_8)-cycloalkylamino, (C_2–C_6)-alkynyl-(C_3–C_8)-cycloalkylamino,
(C_1–C_6)-alkyl-(C_4–C_8)-cycloalkenylamino, (C_2– C_6)-alkenyl-(C_4–C_8)-cycloalkenylamino, (C_1–C_6)-trialkylsilyl, aryl, aryloxy, arylthio, arylamino, arylcarbamoyl, aroyl, aroyloxy, aryloxycarbonyl, arl-(C_1–C_4)-alkoxy, aryl-(C_2–C_4)-alkenyloxy, aryl-(C_1–C_4)-alkylthio, aryl-(C_2–C_4)-alkenylthio, aryl-($_1$– C_4)-alkylamino, aryl-(C_2–C_4)-alkenylamino, aryl-(C_1– C_6)-dialkylsilyl, diaryl-(C_1–C_6)-alkylsilyl, triarylsilyl and 5- or 6-membered heterocyclyl,
of which the nineteen last-mentioned radicals are optionally substituted in their cyclic moiety by one or more substituents from the group

halogen, cyano, nitro, amino, hydroxyl, thio, (C_1–C_4)-alkyl, (C_1–C_4)-haloalkyl, (C_1–C_4)-alkoxy, (C_1–C_4)-haloalkoxy, (C_1–C_4)-alkylthio, (C_1– C_4)-haloalkylthio, (C_1–C_4)-alkylamino, (C_1–C_4)-haloalkylamino, formyl and (C_1–C_4)-alkanoyl,

aryl, which is optionally substituted by one or more radicals from the group

halogen, cyano, nitro, hydroxyl, thio, amino, formyl, (C_1– C_6)-alkoxy, (C_2–C_6)-alkenyloxy, (C_2–C_6)-alkynyloxy, (C_1– C_6)-haloalkyloxy, (C_2–C_6)-haloalkenyloxy, (C_2– C_6)-haloalkynyloxy, (C_3–C_8)-cycloalkoxy, (C_4– C_8)-cycloalkenyloxy, (C_3–C_8)-halocycloalkoxy, (C_4– C_8)-halocycloalkenyloxy, carbamoyl, (C_1–C_6)-mono- or dialkylcarbamoyl, (C_1–C_6)-alkoxycarbonyl, (C_1– C_6)-alkanoyloxy, (C_1–C_6)-mono- or dihaloalkylcarbamoyl, (C_1–C_6)-haloalkoxycarbonyl, (C_1–C_6)-haloalkanoyloxy, (C_1– C_6)-alkaneamido, (C_1–C_6)-haloalkaneamido, (C_2– C_6)-alkeneamido, (C_1–C_6)-alkylthio, (C_2–C_6)-alkenylthio, (C_2– C_6)-alkynylthio, (C_1–C_6)-haloalkylthio, (C_2–C_6)-haloalkenylthio,

(C_2–C_6)-haloalkynylthio, (C_3–C_8)-cycloalkylthio, (C_4–C_8)-cycloalkenylthio, (C_3–C_8)-halocycloalkylthio, (C_3–C_8)-halocycloalkenylthio, (C_1–C_6)-alkylsulfinyl, (C_2–C_6) alkenylsulfinyl, (C_2–C_6)-alkynylsulfinyl, (C_1– C_6)-haloalkylsulfinyl, (C_2–C_6)-haloalkenylsulfinyl, (C_2– C_6)-haloalkynylsulfinyl, (C_3–C_8)-cycloalkylsulfinyl, (C_4–C_8)-cycloalkenylsulfinyl, (C_3–C_8)-halocycloalksulfinyl, (C_4– C_8)-halocycloalkenylsulfinyl, (C_1–C_6)-alkylsulfonyl, (C_2– C_6)-alkenylsulfonyl, (C_2–C_6)-alkynylsulfonyl, (C_1– C_6)-haloalkylsulfonyl, (C_2–C_6)-haloalkenylsulfonyl, (C_2– C_6)-haloalkynylsulfonyl, (C_3–C_8)-cycloalkylsulfonyl, (C_4– C_8)-cycloalkenylsulfonyl, ($C_3$$C_8$)-halocycloalksulfonyl, (C_4–C_8)-halocycloalkenylsulfonyl, (C_1–C_6)-alkylamino, (C_2–C_6)-alkenylamino, (C_2–C_6)-alkynylamino, (C_1–C_6)-haloalkylamino,

(C_2–C_6)-haloalkenylamino, (C_2–C_6)-haloalkynylamino, (C_3– C_8)-cycloalkylamino, (C_4–C_8)-cycloalkenylamino, (C_3– C_8)-halocycloalkamino and (C_4–C_8)-halocycloalkenylamino,

—C(=W)R^{11}, OR^{11} or NR^{11}_2;

R^9 is (C_1–C_6)-alkyl, (C_2–C_6)-alkenyl, (C_2–C_6)-alkynyl, (C_3–C_8)-cycloalkyl, (C_4–C_8)-cycloalkenyl, (C_3–C_8)-cycloalkyl-(C_1– C_4)-alkyl, (C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkyl, (C_3–C_8)-cycloalkyl-(C_2–C_4)-alkenyl, (C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkenyl,

where the nine last-mentioned radicals are optionally substituted by one or more radicals from the group halogen, cyano, (C_1–C_6)-alkoxy, (C_2–C_6)-alkenyloxy, (C_2–C_6) alkynyloxy and (C_1–C_6)-haloalkoxy;

R^{10} is hydrogen,

(C_1–C_6)-alkyl, (C_2–C_6)-alkenyl, (C_2–C_6)-alkynyl, (C_3–C_8)-cycloalkyl, (C_4–C_8)-cycloalkenyl, (C_3–C_8)-cycloalkyl-(C_1– C_4)-alkyl, (C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkyl, (C_3– C_8)-cycloalkyl-(C_2–C_4)-alkenyl, (C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkenyl, (C_1–C_6)-alkyl-(C_3–C_8)-cycloalkyl, (C_2–C_6)-alkenyl-(C_3–C_8)-cycloalkyl, (C_2–C_6)-alkynyl-(C_3–C_8)-cycloalkyl, (C_1–C_6)-alkyl-(C_4– C_8)-cycloalkenyl, (C_2–C_6)-alkenyl-(C_4–C_8)-cycloalkenyl,

where the fourteen last-mentioned radicals are optionally substituted by one or more radicals from the group halogen, cyano, nitro, hydroxyl, thio, amino, formyl, (C_1– C_6)-alkoxy, (C_2–C_6)-alkenyloxy, (C_2–C_6)-alkynyloxy, (C_1– C_6)-haloalkyloxy, (C_2–C_6)-haloalkenyloxy, (C_2– C_6)-haloalkynyloxy, (C_3–C_8)-cycloalkoxy, (C_4– C_8)-cycloalkenyloxy, (C_3–C_8)-halocycloalkoxy, (C_4– C_8)-halocycloalkenyloxy, (C_3–C_8)-cycloalkyl-(C_1–C_4)-alkoxy, (C_4– C_8)-cycloalkenyl-(C_1–C_4)-alkoxy, (C_3–C_8)-cyloalkyl-(C_2–C_4)-alkenyloxy, (C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkenyloxy, (C_1–C_6)-alkyl-(C_3–C_8)-cycloalkoxy, (C_2–C_6)-alkenyl-(C_3– C_8)-cycloalkoxy, (C_2–C_6)-alkynyl-(C_3–C_8)cycloalkoxy, (C_1– C_6)-alkyl-(C_4–C_8)-cycloalkenyloxy, (C_2–C_6)-alkenyl-(C_4– C_8)-cycloalkenyloxy, (C_1–C_4)-alkoxy-(C_1–C_6)-alkoxy, (C_1–C_4)-alkoxy-(C_2–C_6)-alkenyloxy, carbamoyl, (C_1–C_6)mono- or dialkylcarbamoyl, (C_1–C_6)-mono- or dihaloalkylcarbamoyl, (C_3–C_8)mono- or dicycloalkylcarbamoyl, (C_1–C_6)-alkoxycarbonyl, (C_3– C_8)-cycloalkoxycarbonyl, (C_1–C_6)-alkanoyloxy, (C_3– C_8)-cycloalkanoyloxy, (C_1–C_6)-haloalkoxycarbonyl, (C_1–C_6)-haloalkanoyloxy, (C_1–C_6)-alkaneamido, (C_1– C_6)-haloalkaneamido, (C_2–C_6)-alkeneamido, (C_3– C_8)-cycloalkaneamido, (C_3–C_8)-cycoalkyl-(C_1–C_4)-alkaneamido,

(C_1–C_6)-alkylthio, (C_2–C_6)-alkenylthio, (C_2–$_6$)-alkynylthio, (C_1–C_6)-haloalkylthio, (C_2–C_6)-haloalkenylthio, (C_2– C_6)-haloalkynylthio, (C_3–C_8)-cycloalkylthio, (C_4– C_8)-cycloalkenylthio, (C_3–C_8)-halocycloalkylthio, (C_4– C_8)-halocycloalkenylthio, (C_3–C_8)-cycloalkyl-(C_1–C_4)-alkylthio, (C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkylthio, (C_3– C_8)-cyloalkyl-(C_2–C_4)-alkenylthio, (C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkenylthio,

(C_1–C_6)-alkyl-(C_3–C_8)-cycloalkylthio, (C_2–C_6)-alkenyl-(C_3– C_8)-cycloalkylthio, (C_2–C_6)-alkynyl-(C_3–C_8)-cycloalkylthio, (C_1–C_6)-alkyl-(C_4–C_8)-cycloalkenylthio, (C_2–C_6)-alkenyl-(C_4– C_8)-cycloalkenylthio, (C_1–C_6)-alkylsulfinyl, (C_2–C_6)-alkenylsulfinyl,

(C_2–C_4)-alkynylsulfinyl, (C_1–C_6)-haloalkylsulfinyl, (C_2–C_6)-haloalkenylsulfinyl, (C_2–C_6)-haloalkynylsulfinyl, (C_3– C_8)-cycloalkylsulfinyl, (C_4–C_8)-cycloalkenylsulfinyl, (C_3– C_8)-halocycloalksulfinyl, (C_4–C_8)-halocycloalkenylsulfinyl, (C_3– C_8)-cycloalkyl-(C_1–C_4)-alkylsulfinyl,

(C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkylsulfinyl, (C_3– C_8)-cycloalkyl-(C_2–C_4)-alkenylsulfinyl, (C_4–C_8)-cycloalkenyl-(C_1– C_4)-alkenylsulfinyl, (C_1–C_6)-alkyl-(C_3–C_8)-cycloalkylsulfinyl, (C_2– C_6)-alkenyl-(C_3–C_8)-cycloalkylsulfinyl, (C_2–C_6)-alkynyl-(C_3– C_8)-cycloalkylsulfinyl, (C_1–C_6)-alkyl-(C_4– C_8)-cycloalkenylsulfinyl, (C_2–C_6)-alkenyl-(C_4– C_8)-cycloalkenylsulfinyl, (C_1–C_6)-alkylsulfonyl, (C_2– C_6)-alkenylsulfonyl,

(C_2–C_6)-alkynylsulfonyl, (C_1–C_6)-haloalkylsulfonyl, (C_2– C_6)-haloalkenylsulfonyl, (C_2–C_6)-haloalkynylsulfonyl, (C_3– C_8)-cycloalkylsulfonyl, (C_4–C_8)-cycloalkenylsulfonyl, (C_3– C_8)-halocycloalksulfonyl, (C_4–C_8)-halocycloalkenylsulfonyl, (C_3– C_8)-cycloalkyl-(C_1–C_4)-alkylsulfonyl, (C_4– C_8)-cycloalkenyl-(C_1–C_4)-alkylsulfonyl, (C_3–C_8)-cycloalkyl-(C_2– C_4)-alkenylsulfonyl, (C_4–C_8)-cycloalkenyl-(C_1–C_4)-alkenylsulfonyl,

(C_1–C_6)-alkyl-(C_3–C_8)-cycloalkylsulfonyl, (C_2–C_6)-alkenyl-(C_3– C_8)-cycloalkylsulfonyl, (C_2–C_6)-alkynyl-(C_3– C_8)-cycloalkylsulfonyl, (C_1–C_6)-alkyl-(C_4–C_8)-cycloalkenylsulfonyl,

(C_2–C_6)-alkenyl-(C_4–C_8)-cycloalkenylsulfonyl, (C_1–C_6)-alkylamino, (C_2–C_6)-alkenylamino, (C_2– C_6)-alkynylamino, (C_1–C_6)-haloalkylamino, (C_2– C_6)-haloalkenylamino, (C_2–C_6)-haloalkynylamino, (C_3– C_8)-cycloalkylamino, (C_4–C_8)-cycloalkenylamino, (C_3– C_8)-halocycloalkamino, (C_4–C_8)-halocycloalkenylamino, (C_3– C_8)-cycloalkyl-(C_1–C_4)-alkylamino, (C_4–C_8)-cycloalkenyl-(C_1– C_4)-alkylamino, (C_3–C_8)-cycloalkyl-(C_2–C_4)-alkenylamino, (C_4– C_8)-cycoalkenyl-(C_1–C_4)-alkenylamino, (C_1–C_6)-alkyl-(C_3– C_8)-cycloalkylamino, (C_2–C_6)-alkenyl-(C_3– C_8)-cycloalkylamino, (C_2–C_6)-alkynyl-(C_3–C_8)-cycloalkylamino,

(C_1–C_6)-alkyl-(C_4–C_8)-cycloalkenylamino, (C_2– C_6)-alkenyl-(C_4–C_8)-cycloalkenylamino, (C_1–C_6)-trialkylsilyl, aryl, aryloxy, arylthio, arylamino, aryl-(C_1–C_4)-alkoxy, aryl-(C_2– C_4)-alkenyloxy, aryl-(C_1–C_4)-alkylthio, aryl-(C_2–C_4)-alkenylthio, aryl-(C_1–C_4)-alkylamino, aryl-(C_2–C_4)-alkenylamino, aryl-(C_1– C_6)-dialkylsilyl, diaryl-(C_1–C_6)-alkylsilyl, triarylsilyl and 5- or 6-membered heterocyclyl,

where the cyclic moiety of the fourteen last-mentioned

radicals is optionally substituted by one or more radicals from the group

halogen, cyano, nitro, amino, hydroxyl, thio, $(C_1–C_4)$-alkyl,

$(C_1–C_4)$-haloalkyl, $(C_3–C_8)$-cycloalkyl, $(C_1–C_4)$-alkoxy, $(C_1–C_4)$-haloalkoxy, $(C_1–C_4)$-alkylthio, $(C_1–C_4)$-haloalkylthio,

$(C_1–C_4)$-alkylamino, $(C_1–C_4)$-haloalkylamino, formyl and $(C_1–C_4)$-alkanoyl,

aryl, 5- or 6-membered heteroaromatic,

where the two last-mention.d radicals are optionally substituted by one or more radicals from the group

halogen, cyano, nitro, hydroxyl, thio, amino, formyl, $(C_1–C_6)$-alkoxy, $(C_2–C_6)$-alkenyloxy, $(C_2–C_6)$-alkynyloxy, $(C_1–C_6)$-haloalkyloxy, $(C_2–C_6)$-haloalkenyloxy, $(C_2–C_6)$-haloalkynyloxy, $(C_3–C_8)$-cycloalkoxy, $(C_4–C_8)$-cycloalkenyloxy, $(C_3–C_8)$-haloyloalkoxy, $(C_4–C_8)$-halocyclalkenyloxy, carbamoyl, $(C_1–C_6)$-mono- or diaklylcarbamoyl, $(C_1–C_6)$-aklocycarbonyl, $(C_1–C_6)$-alkanoyloxy,

$(C_1–C_6)$-mono- or dihaloalkylcarbamoyl, $(C_1–C_6)$-haloalkoxycarbonyl, $(C_1–C_6)$-haloalkanoyloxy, $(C_1–C_6)$-alkaneamido, $(C_1–C_6)$-haloalkaneamido, $(C_2–C_6)$-alkeneamido, $(C_1–C_6)$-alkylthio, $(C_2–C_6)$-alkenylthio, $(C_2–C_6)$-alkynylthio, $(C_1–C_6)$-haloalkylthio, $(C_2–C_6)$-haloalkenylthio,

$(C_2–C_6)$-haloalkynylthio, $(C_3–C_8)$-cycloalkylthio, $(C_4–C_8)$-cycloalkenylthio,

$(C_3–C_8)$-halocycloalkthio, $(C_4–C_8)$-halocycloalkenylthio, $(C_1–C_6)$-alkylsulfinyl, $(C_2–C_6)$-alkenylsulfinyl, $(C_2–C_6)$-alkynylsulfinyl, $(C_1–C_6)$-haloalkylsulfinyl, $(C_2–C_6)$-haloalkenylsulfinyl, $(C_2–C_6)$-haloalkynylsulfinyl, $(C_3–C_8)$-cycloalkylsulfinyl, $(C_4–C_8)$-cycloalkenylsufinyl, $(C_3–C_8)$-halocycloalksulfinyl, $(C_4–C_8)$-halocycloalkenylsulfinyl, $(C_1–C_6)$-alkylsulfonyl, $(C_2–C_6)$-alkenylsulfonyl, $(C_2–C_6)$ alkynylsulfonyl, $(C_1–C_6)$-haloalkylsulfonyl, $(C_2–C_6)$-haloalkenylsulfonyl, $(C_2–C_6)$-haloalkynylsulfonyl, $(C_3–C_8)$-cycloalkylsulfonyl, $(C_4–C_8)$-haloalkenylsulfonyl, $(C_3–C_8)$-halocycloalksulfonyl, $(C_4–C_8)$-halocycloalkenylsulfonyl, $(C_1–C_6)$-alkylamino, $(C_2–C_6)$-alkenylamino, $(C_2–C_6)$-alkynylamino,

$(C_1–C_6)$aloalkylamino, $(C_2–C_6)$-haloalkenylamino, $(C_2–C_6)$-haloalkynylamino, $(C_3–C_8)$-cycloalkylamino, $(C_4–C_8)$-cycloalkenylamino, $(C_3–C_8)$-halocycloalkylamino and $(C_4–C_8)$-haloycloalkenylamino;

R^{11} is $(C_1–C_{10})$-alkyl, haloalkyl, aryl,

which is optionally substituted by one or more radicals from the group

halogen, cyano, nitro, $(C_1–C_4)$-alkoxy, $(C_1–C_4)$-alkyl, amino, $(C_1–C_4)$-monoalkylamino and $(C_1–C_4)$-dialkylamino,

$N^{10}{}_2$, OR^{10} or SR^{10}.

US 6,331,532 B1

MITOCHONDRIALLY TARGETED ANTIOXIDANTS

Michael P. Murphy, and Robin A. J. Smith, both of Dunedin, New Zealand, assignors to University of Otago, Dunedin, New Zealand

Continuation-in-part of application No. PCT/NZ98/00173, filed on Nov. 25, 1998. This application May 25, 2000, Appl. No. 577,877.

Int. Cl. A61K *31/665;31/66*

U.S. Cl. 514—100 **24 Claims**

1. A mitochondrially-targeted antioxidant compound comprising a lipophilic cation covalently coupled to an antioxidant moiety, wherein the antioxidant moiety is capable of being transported through the mitochondrial membrane and accumulated within the mitochondria of intact cells, with the proviso that the compound is not thiobutyltriphenylphosphonium bromide.

US 6,331,533 B1

METHOD FOR INHIBITING DENTAL RESORPTIVE LESIONS

Colin E. Harvey, Ardmore, Pa., and Kenneth L. Mohn, Rahway, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Provisional application No. 60/108,576, filed on Nov. 16, 1998. This application Nov. 9, 1999, Appl. No. 436,585.

Int. Cl. A61K *31/66*

U.S. Cl. 514—108 **20 Claims**

1. A method for treating feline dental resorptive lesions in a cat in need thereof comprising administering to said cat a therapeutically effective amount of a bisphosphonate or a pharmaceutically acceptable salt thereof.

US 6,331,534 B1

STEROIDS AS NEUROCHEMICAL STIMULATORS OF THE VNO TO ALLEVIATE PAIN

David L. Berliner, San Mateo County, Calif., and Luis Monti-Bloch, Salt Lake City, Utah, assignors to Pherin Pharmaceuticals, Inc., Menlo Park, Calif.

Continuation-in-part of application No. 08/725,862, filed on Oct. 4, 1996, now abandoned, which is a continuation-in-part of application No. 08/686,092, filed on Jul. 23, 1996, now Pat. No. 6,057,439, which is a continuation-in-part of application No. 08/625,268, filed on Mar. 29, 1996, now Pat. No. 6,066,627, which is a continuation-in-part of application No. 08/286,073, filed on Aug. 4, 1994. This application Aug. 28, 1997, Appl. No. 919,621.

Int. Cl. A61K *31/56*

U.S. Cl. 514—177 **68 Claims**

1. A method of treating pain in an individual, said method comprising:

providing a steroid which binds to receptors on the surface of nasal neuroepithelial cells of said individual wherein said cells are part of tissue other than olfactory epithelia; and,

administering said effective amount of said steroid within a nasal passage of said individual such that said steroid binds specifically to said receptors and results in alleviation of symptoms of said disorder in said individual.

US 6,331,535 B1

RETINYL CARBONATE DERIVATIVES, PREPARATION PROCESS AND USES

Remy Tuloup, Paris; Maria Dalko, Gif S/Yvette, and Gilles Rubinstenn, Paris, all of France, assignors to L'Oreal, Paris, France

Filed May 30, 2000, Appl. No. 580,833

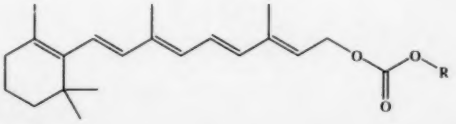
Claims priority, application France, Jun. 1, 1999, 99 06872

Int. Cl. A61K *31/56;* **C07J** *9/00;* **C07C** *69/96*

U.S. Cl. 514—182 **15 Claims**

1. A retinol derivative of formula (I):

(I)



wherein R is selected from the group consisting of a steryl radical, an oxysteryl radical, a sapogenin residue, a dehydro-epi-androsterone residue, a cholesteryl radical and a retinyl radical.

US 6,331,536 B1

PHARMACOLOGICAL TREATMENT FOR SLEEP APNEA

Miodrag Radulovacki, Chicago, and David W. Carley, Evanston, both of Ill., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

PCT No. PCT/US99/04347, § 371 Date Aug. 23, 2000, § 102(e) Date Aug. 23, 2000, PCT Pub. No. WO99/43319, PCT Pub. Date Sep. 2, 1999

Provisional application No. 60/076,216, filed on Feb. 27, 1998. This PCT application Feb. 26, 1999, Appl. No. 622,823.

Int. Cl. A61K *31/55;31/505;31/44;31/445*

U.S. Cl. 514—214.02 **37 Claims**

1. A method of preventing or ameliorating sleep-related breathing disorder the method comprising administering to a patient in need thereof an effective amount of a serotonin receptor antagonist.

US 6,331,537 B1

CARBOXYLIC ACIDS AND CARBOXYLIC ACID ISOSTERES OF N-HETEROCYCLIC COMPOUNDS

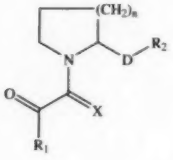
Gregory S. Hamilton, Catonsville, Md.; Mark H. Norman, Thousand Oaks, Calif., and Yong-Qian Wu, Columbia, Md., assignors to GPI Nil Holdings, Inc., Wilmington, Del.

Continuation-in-part of application No. 09/204,237, filed on Dec. 3, 1998, now abandoned, Provisional application No. 60/087,788, filed on Jun. 3, 1998. This application Dec. 2, 1999, Appl. No. 453,571.

Int. Cl. A01N *43/46;* **A61K** *31/55;* **C07D** *403/12*

U.S. Cl. 514—215 **18 Claims**

1. A compound having the formula (I):



I

where

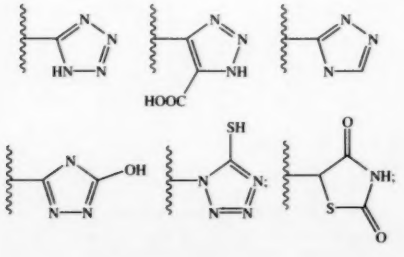
n is 3;

X is either O or S;

R_1 is selected from the group consisting of C_1–C_9 straight or branched chain alkyl, C_2–C_9 straight or branched chain alkenyl, aryl, heteroaryl, carbocycle, or heterocycle;

D is a bond, or a C_1–C_{10} straight or branched chain alkyl, C_2–C_{10} alkenyl or C_2–C_{10} alkynyl;

R_2 is selected from the group consisting of —COOH; —SO_3H; —SO_2HNR^3; —$PO_2(R^3)_2$; —CN; —$PO_3(R^3)_2$; —OR^3; —SR^3; —$NHCOR^3$; —$N(R^3)_2$; —$CONZ(R^3)$; —$CONH(O)R^3$; —$CONHNHSO_2R^3$; —$COHNSO_2R^3$; —$CONR^3CN$;



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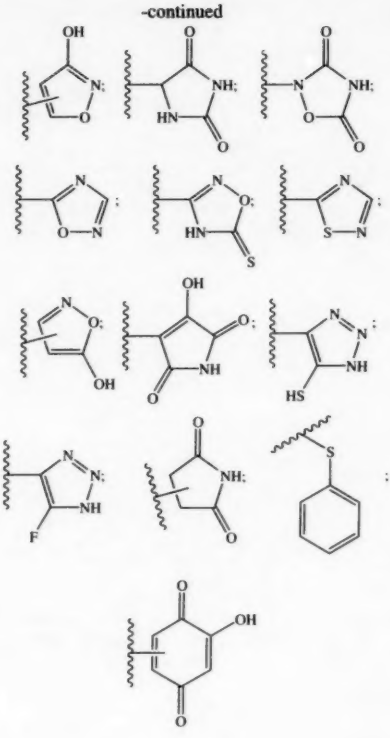


wherein any of the atoms of said ring structure are optionally substituted in one or more positions with R^3; and

wherein said alkyl, alkenyl, alkynyl, aryl, heteroaryl, carbocycle, or heterocycle is optionally substituted with one or more substituents selected from R^3 and Z, where R^3 and Z are independently hydrogen, hydroxy, halo, haloalkyl, thiocarbonyl, alkoxy, alkenoxy, alkylaryloxy, aryloxy, arylalkyloxy, cyano, nitro, imino, alkylamino, aminoalkyl, sulfhydryl, thioalkyl, alkylthio, sulfonyl, C_1–C_6 straight or branched chain alkyl, C_2–C_6 straight or branched chain alkenyl or alkynyl, aryl, aralkyl, heteroaryl, carbocycle, heterocycle, or CO_2R^7 where R^7 is hydrogen or C_1–C_9 straight or branched chain alkyl or C_2–C_9 straight or branched chain alkenyl; or a pharmaceutically acceptable salt, ester, or solvate thereof.

US 6,331,538 B1

7-SUBSTITUTED QUINAZOLIN-2,4-DIONES USEFUL AS ANTIBACTERIAL AGENTS

John Michael Domagala, Canton; Edmund Lee Ellsworth, Brighton, both of Mich.; Liren Huang, Edmonton, Canada; Thomas Eric Renau, Santa Clara, Calif.; Rajeshwar Singh, Edmonton, Canada, and Michael Andrew Stier, Ypsilanti, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

PCT No. PCT/US98/19877, § 371 Date Mar. 15, 2000, § 102(e) Date Mar. 15, 2000, PCT Pub. No. WO99/21840, PCT Pub. Date May 6, 1999

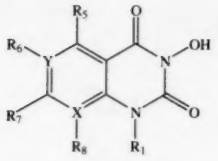
Provisional application No. 60/098,588, filed on Aug. 31, 1998, Provisional application No. 60/063,556, filed on Oct. 28, 1997. This PCT application Sep. 23, 1998, Appl. No. 508,796.

Int. Cl. C07D *239/96;403/04;471/06;* **A61K** *31/505*

U.S. Cl. 514—224.5 **5 Claims**

1. A compound of Formula I:

I



or a pharmaceutically acceptable salt thereof wherein:

R_1 is ethyl, cyclopropyl, 2-fluorocyclopropyl, cyclopropylmethyl, t-butyl, or phenyl optionally substituted by F, Cl, OR, or $N(R)_2$;

R is H, methyl, ethyl, isopropyl, t-butyl, or phenyl;

R' is methyl, ethyl, phenyl, or a 2, 3, or 4-pyridyl each of which may be substituted with F, Cl, CH_3, $(CH_2)_nN(R)_2$, OR;

R_5, R_6, and R_8 are each independently selected from H, F, Cl, Br, CH_3, NH_2, $CH{=}CH_2$, NO_2, and OCH_3;

R_7 is selected from R_5, R_6, R_8, a heterocyclic ring of 4 to 7 atoms, a fused heterocyclic ring of 8 to 10 atoms or a bicyclic heterocyclic of 6 to 9 atoms, each having 1 to 4 heteroatoms, and each of which may be substituted by one or more of R', F, Cl, $(C(R)_2)_nNR_2$, $(C(R)_2)_nOP$, O, $(C(R)_2)_nCON(R)_2$, $(C(R)_2)_nCOR$, $(C(R)_2)_nNRCOR$, $(C(R)_2)_nCO_2R$, a straight or branched alkyl of 1 to 4 atoms, or a phenyl group which may also be a substituted as described above;

n is an integer from 0 to 3;

1 to 4 heteroatoms, and each of which may be substituted by one or more of R', F, Cl, $(C(R)_2)_nNR_2$, $(C(R)_2)_nOR$, O, $(C(R)_2)_nCON(R)_2$, $(C(R)_2)_nCOR$, $(C(R)_2)_nNRCOR$, $(C(R)_2)_nCO_2R$, a straight or branched alkyl of 1 to 4 atoms, or a phenyl group which may also be substituted as described above;

n is an integer from 0 to 3;

X and Y are carbon; and

provided that R_6 and R_8 are not both Cl, and R_5, R_6, R_7, and R_8 are not all H.

US 6,331,539 B1

SULFONAMIDE AND SULFAMIDE SUBSTITUTED IMIDAZOQUINOLINES

Stephen L. Crooks, Mahtomedi, Minn.; Kyle J. Lindstrom, Houlton; Bryon A. Merrill, River Falls, both of Wis., and Michael J. Rice, Oakdale, Minn., assignors to 3M Innovative Properties Company, St. Paul, Minn.

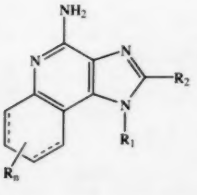
Provisional application No. 60/138,365, filed on Jun. 10, 1999. This application Jun. 7, 2000, Appl. No. 589,216.

Int. Cl. A61K *31/4745;31/541;* **C07D** *471/04;417/14;* **A61P** *37/02*

U.S. Cl. 514—228.5 **31 Claims**

1. A compound of the formula (I):

(I)



wherein

R_1 is -alkyl-NR_3—SO_2—X—R_4 or -alkenyl-NR_3—SO_2—X—R_4;

X is a bond or —NR_5—;

R_4 is aryl, heteroaryl, heterocyclyl, alkyl or alkenyl, each of which may be unsubstituted or substituted by one or more substituents selected from the group consisting of:

-alkyl;
-alkenyl;
-aryl;
-heteroaryl;
-heterocyclyl;
-substituted cycloalkyl;
-substituted aryl;
-substituted heteroaryl;
-substituted heterocyclyl;
—O-alkyl;
—O-$(alkyl)_{0-1}$-aryl;
—O-$(alkyl)_{0-1}$-substituted aryl;
—O-$(alkyl)_{0-1}$-heteroaryl;
—O-$(alkyl)_{0-1}$-substituted heteroaryl;
—O-$(alkyl)_{0-1}$-heterocyclyl;
—O-$(alkyl)_{0-1}$-substituted heterocyclyl;
—COOH;
—CO—O-alkyl;
—CO-alkyl;
—$S(O)_{0-2}$-alkyl;
—$S(O)_{0-2}$-(alkyl)-aryl;
—$S(O)_{0-2}$-(alkyl)-substituted aryl;
—$S(O)_{0-2}$-(alkyl)-heteroaryl;
—$S(O)_{0-2}$-(alkyl)-substituted heteroaryl;
—$S(O)_{0-2}$-(alkyl)-heterocyclyl;
—$S(O)_{0-2}$-(alkyl)-substituted heterocyclyl;
-$(alkyl)_{0-1}$—NR_3R_3;
-$(alkyl)_{0-1}$—NR_3—CO—O-alkyl;
-$(alkyl)_{0-1}$—NR_3—CO-alkyl;
-$(alkyl)_{0-1}$—NR_3—CO-aryl;
-$(alkyl)_{0-1}$—NR_3—CO-substituted aryl;
-$(alkyl)_{0-1}$—NR_3—CO-heteroaryl;
-$(alkyl)_{0-1}$—NR_3—CO-substituted heteroaryl;
—N_3;
-halogen;
-haloalkyl;
-haloalkoxy;
—CO-haloalkyl;
—CO-haloalkoxy;
—NO_2;
—CN;
—OH;
—SH; and in the case of alkyl, alkenyl, or heterocyclyl, oxo;

R_2 is selected from the group consisting of:

-hydrogen;
-alkyl;
-alkenyl;
-aryl;
-substituted aryl;
-heteroaryl;
-substituted heteroaryl;
-alkyl-O-alkyl;
-alkyl-O-alkenyl; and
-alkyl or alkenyl substituted by one or more substituents selected from the group consisting of:
—OH;
-halogen;
—$N(R_3)_2$;
—CO—$N(R_3)_2$;
—CO—C_{1-10} alkyl;
—CO—O—$_{C1-10}$ alkyl;
—N_3;
-aryl;
-substituted aryl;
-heteroaryl;
-substituted heteroaryl;
-heterocyclyl;
-substituted heterocyclyl;
—CO-aryl;
—CO-(substituted aryl);
—CO-heteroaryl; and
—CO-(substituted heteroaryl);

each R_3 is independently selected from the group consisting of hydrogen and C_{1-0} alkyl;

R_5 is selected from the group consisting of hydrogen and C_{1-10} alkyl, or R_4 and R_5 can combine to form a 3 to 7 membered heterocyclic or substituted heterocyclic ring;

n is 0 to 4 and each R present is independently selected from the group consisting of C_{1-10} alkyl, C_{1-10} alkoxy, halogen and trifluoromethyl, or a pharmaceutically acceptable salt thereof.

US 6,331,540 B1

PHARMACEUTICAL COMPOSITIONS CONTAINING A FLUOROQUINOLONE ANTIBIOTIC DRUG AND XANTHAN GUM

Bhagwati P. Kabra, Arlington, Tex., assignor to Alcon Universal Ltd., Hunenberg, Switzerland

Provisional application No. 60/162,693, filed on Nov. 1, 1999. This application Oct. 10, 2000, Appl. No. 686,083.

Int. Cl. A61K *31/535;47/00;33/14*

U.S. Cl. 514—230.2 **7 Claims**

1. A method of enhancing the stability of an aqueous pharmaceutical composition containing 0.4 –0.8% (w/w) xanthan gum and a fluoroquinolone antibiotic drug comprising the step of adding to the composition a water-soluble calcium salt in an amount of at least 0. 15% (w/w), such that the composition is homogeneous and has a turbidity rating (NTU)≦40 at room temperature.

US 6,331,541 B1

N-UREIDOALKYL-PIPERIDINES AS MODULATORS OF CHEMOKINE RECEPTOR ACTIVITY

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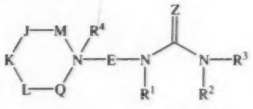
Provisional application No. 60/161,222, filed on Oct. 22, 1999, Provisional application No. 60/112,717, filed on Dec. 18, 1998. This application Dec. 17, 1999, Appl. No. 465,288.

Int. Cl. C07D *237/02;413/08;217/00;* **A61K** *31/47;31/445*

U.S. Cl. 514—237.2 **42 Claims**

1. A compound of formula (I):

(I)



or stereoisomers or pharmaceutically acceptable salts thereof, wherein:

M is selected from CH_2, CHR^5, CHR^{13}, $CR^{13}R^{13}$, and CR^5R^{13};

Q is selected from CHR^{13}, $CR^{13}R^{13}$, and CR^5R^{13};

J, K, and L are independently selected from CH_2, CHR^5, CHR^6, CR^6R^6 and CR^5R^6;

with the proviso at least one of M, J, K, L, or Q contains an R^5;

Z is selected from O, S, NR^{1a}, CHCN, $CHNO_2$, and $C(CN)_2$;

R^{1a} is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, $CONR^{1b}R^{1b}$, OR^{1b}, NO_2, CN, and $(CH_2)_nphenyl$;

R^{1b} is independently selected from H, C_{1-3} alkyl, C_{3-6} cycloalkyl, and phenyl;

E is $—(CR^7R^8)—(CR^9R^{10})_r—(CR^{11}R^{12})—$; R^1 and R^2 are independently selected from H, C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, and a $(CH_2)_r—C_{3-10}$ carbocyclic residue substituted with 0–5 R^a;

R^a, at each occurrence, is selected from C_{1-4} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rNR^bR^b$, $(CH_2)_rOH$, $(CH_2)_rOR^c$, $(CH_2)_rSH$, $(CH_2)_rSR^c$, $(CH_2)_rC(O)R^b$, $(CH_2)_rC(O)NR^bR^b$, $(CH_2)_rNR^bC(O)R^b$, $(CH_2)_rC(O)OR^b$, $(CH_2)_rOC(O)R^c$, $(CH_2)_rCH(=NR^b)NR^bR^b$, $(CH_2)_rNHC(=NR^b)NR^bR^b$, $(CH_2)_rS(O)_pR^c$, $(CH_2)_rS(O)_2NR^bR^b$, $(CH_2)_rNR^bS(O)_2R^c$, and $(CH_2)_rphenyl$;

R^b, at each occurrence, is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, and phenyl;

R^c, at each occurrence, is selected from C_{1-6} alkyl, C_{3-6} cycloalkyl, and phenyl;

alternatively, R^2 and R^3 join to form a 5, 6, or 7 -membered ring substituted with 0–3 R^a;

R^3 is selected from a $(CR^{3'}R^{3''})_r—C_{3-10}$ carbocyclic residue substituted with 0–5 R^{15} and a $(CR^{3'}R^{3''})_r$- 5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{15};

$R^{3'}$ and $R^{3''}$, at each occurrence, are selected from H, C_{1-6} alkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, and phenyl;

R^4 is absent, taken with the nitrogen to which it is attached to form an N-oxide, or selected from C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, $(CH_2)_qC(O)R^{4b}$, $(CH_2)_qC(O)NR^{4a'}R^{4a''}$, $(CH_2)_qC(O)OR^{4b}$, and a $(CH_2)_r—C_{3-10}$ carbocyclic residue substituted with 0–3 R^{4c};

$R^{4a'}$ and $R^{4a''}$, at each occurrence, are selected from H, C_{1-6} alkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, and phenyl;

R^{4b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, $(CH_2)_rC_{3-6}$ cycloalkyl, C_{2-8} alkynyl, and phenyl;

R^{4c}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, $(CH_2)_rOH$, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{4a'}R^{4a''}$, and $(CH_2)_rphenyl$;

alternatively, R^4 joins with R^7, R^9, or R^{11} to form a 5, 6 or 7 membered piperidinium spirocycle or pyrrolidinium spirocycle substituted with 0–3 R^a;

R^5 is selected from a $(CR^{5'}R^{5''})_r$-C_{3-10} carbocyclic residue substituted with 0–5 R^{16} and a $(CR^{5'}R^{5''})_r$ -5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{16};

$R^{5'}$ and $R^{5''}$, at each occurrence, are selected from H, C_{1-6} alkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, and phenyl;

R^6, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, $(CF_2)_rCF_3$, CN, $(CH_2)_rNR^{6a'}R^{6a''}$, $(CH_2)_rOH$, $(CH_2)_rOR^{6b}$, $(CH_2)_rSH$, $(CH_2)_rSR^{6b}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{6b}$, $(CH_2)_rC(O)NR^{6a'}R^{6a''}$, $(CH_2)_rNR^{6d}C(O)R^{6c}$, $(CH_2)_rC(O)OR^{6b}$, $(CH_2)_rOC(O)R^{6b}$, $(CH_2)_rS(O)_pR^{6b}$, $(CH_2)_rS(O)_2NR^{6a'}R^{6a''}$, $(CH_2)_rNR^{6d}S(O)_2R^{6b}$, and $(CH_2)_rphenyl$ substituted with 0–3 R^{6c};

$R^{6a'}$ and $R^{6a''}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, and phenyl substituted with 0–3 R^{6c};

R^{6b}, at each occurrence, is selected from C_{1-6} alkyl, C_{3-6} cycloalkyl, and phenyl substituted with 0–3 R^{6c};

R^{6c}, at each occurrence, is selected from C_{1-6} alkyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, $(CH_2)_rOH$, $(CH_2)_rSC_{1-5}$ alkyl, and $(CH_2)_rNR^{6d}R^{6d}$;

R^{6d}, at each occurrence, is selected from H, C_{1-6} alkyl, and C_{3-6} cycloalkyl;

with the proviso that when any of J, K, or L is CR^6R^6 and R^6 is halogen, cyano, nitro, or bonded to the carbon to which it is attached through a heteroatom, the other R^6 is not halogen, cyano, or bonded to the carbon to which it is attached through a heteroatom;

R^7, is selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_qOH$, $(CH_2)_qSH$, $(CH_2)_qOR^{7d}$, $(CH_2)_qSR^{7d}$, $(CH_2)_qNR^{7a}R^{7a'}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{7b}$, $(CH_2)_rC(O)NR^{7a}R^{7a'}$, $(CH_2)_qNR^{7a}C(O)R^{7a}$, $(CH_2)_qNR^{7a}C(O)H$, $(CH_2)_rC(O)OR^{7b}$, $(CH_2)_qOC(O)R^{7b}$, $(CH_2)_qS(O)_pR^{7b}$, $(CH_2)_qS(O)_2NR^{7a}R^{7a'}$, $(CH_2)_qNR^{7a}S(O)_2R^{7b}$, C_{1-6} haloalkyl, a $(CH_2)_r—C_{3-10}$ carbocyclic residue substituted with 0–3 R^{7c}, and a $(CH_2)_r$-5-10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{7c};

$R^{7a}$and $R^{7a'}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r—C_{3-10}$ carbocyclic residue substituted with 0–5 R^{7e}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{7e};

R^{7b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$—C_{3-6} carbocyclic residue substituted with 0–2 R^{7e}, and a $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{7e};

R^{7c}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rNR^{7f}R^{7f}$, $(CH_2)_rOH$, $(CH_2)_rOC_{1-4}$ alkyl, $(CH_2)_rSC_{1-4}$ alkyl, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{7b}$, $(CH_2)_rC(O)NR^{7f}R^{7f}$, $(CH_2)_rNR^{7f}C(O)R^{7a}$, $(CH_2)_rC(O)OC_{1-4}$ alkyl, $(CH_2)_rOC(O)R^{7b}$, $(CH_2)_rC(=NR^{7f})NR^{7f}R^{7f}$, $(CH_2)_rS(O)_pR^{7b}$, $(CH_2)_rNHC(=NR^{7f})NR^{7f}R^{7f}$, $(CH_2)_rS(O)_2NR^{7f}R^{7f}$, $(CH_2)_rNR^{7f}S(O)_2R^{7b}$, and $(CH_2)_r$phenyl substituted with 0–3 R^{7e};

R^{7d}, at each occurrence, is selected from C_{1-6} alkyl substituted with 0–3 R^{7e}, alkenyl, alkynyl, and a C_{3-10} carbocyclic residue substituted with 0–3 R^{7c};

R^{7e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{7f}R^{7f}$, and $(CH_2)_r$phenyl;

R^{7f}, at each occurrence, is selected from H, C_{1-6} alkyl, and C_{3-6} cycloalkyl;

R^8 is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, and $(CH_2)_r$phenyl substituted with 0–3 R^{8a};

R^{8a}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{7f}R^{7f}$, and $(CH_2)_r$phenyl;

alternatively, R^7 and R^8 join to form C_{3-7} cycloalkyl, or $=NR^{8b}$;

R^{8b} is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, OH, CN, and $(CH_2)_r$-phenyl;

R^9, is selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, F, Cl, Br, I, NO_2, CN, $(CH_2)_rOH$, $(CH_2)_rSH$, $(CH_2)_rOR^{9d}$, $(CH_2)_rSR^{9d}$, $(CH_2)_rNR^{9a}R^{9a'}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{9b}$, $(CH_2)_rC(O)NR^{9a}R^{9a'}$, $(CH_2)_rNR^{9a}C(O)R^{9a}$, $(CH_2)_rNR^{9a}C(O)H$, $(CH_2)_rNR^{9a}C(O)NHR^{9a}$, $(CH_2)_rC(O)OR^{9b}$, $(CH_2)_rOC(O)R^{9b}$, $(CH_2)_rOC(O)NHR^{9a}$, $(CH_2)_rS(O)_pR^{9b}$, $(CH_2)_rS(O)_2NR^{9a}R^{9a'}$, $(CH_2)_rNR^{9a}S(O)_2R^{9b}$, C_{1-6} haloalkyl, a $(CH_2)_r$—C_{3-10} carbocyclic residue substituted with 0–5 R^{9c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{9c};

R^{9a} and $R^{9a'}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-9} alkynyl, a $(CH_2)_r$—C_{3-10} carbocyclic residue substituted with 0–5 R^{9c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{9c};

R^{9b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$—C_{3-6} carbocyclic residue substituted with 0–2 R^{9c}, and a $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{9c};

R^{9c}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rNR^{9f}R^{9f}$, $(CH_2)_rOH$, $(CH_2)_rOC_{1-4}$ alkyl, $(CH_2)_rSC_{1-4}$ alkyl, $(CH_2)_rC(O)OH$, $(CH_2)_rC(o)R^{9b}$, $(CH_2)_rC(O)NR^{9f}R^{9f}$, $(CH_2)_rNR^{9f}C(O)R^{9a}$, $(CH_2)_rC(O)OC_{1-4}$ alkyl, $(CH_2)_rOC(O)R^{9b}$, $(CH_2)_rC(=NR^{9f})NR^{9f}R^{9f}$, $(CH_2)_rS(O)_pR^{9b}$, $(CH_2)_rNHC(=NR^{9f})NR^{9f}R^{9f}$, $(CH_2)_rS(O)_2NR^{9f}R^{9f}$, $(CH_2)_rNR^{9f}S(O)_2R^{9b}$, and $(CH_2)_r$phenyl substituted with 0–3 R^{9e};

R^{9d}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, a C_{3-10} carbocyclic residue substituted with 0–3 R^{9c}, and a 5–6 membered heterocyclic system containing 1–4 heteroatoms selected from the group consisting of N, O, and S substituted with 0–3 R^{9c};

R^{9e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{9f}R^{9f}$, and $(CH_2)_r$phenyl;

R^{9f}, at each occurrence, is selected from H, C_{1-6} alkyl, and C_{3-6} cycloalkyl;

R^{10}, is selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, F, Cl, Br, I, NO_2, CN, $(CH_2)_rOH$, $(CH_2)_rOR^{10d}$, $(CH_2)_rSR^{10d}$, $(CH_2)_rNR^{10a}R^{10a'}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{10b}$, $(CH_2)_rC(O)NR^{10a}R^{10a'}$, $(CH_2)_rNR^{10a}C(O)R^{10a}$, $(CH_2)_rNR^{10a}C(O)H$, $(CH_2)_rC(O)OR^{10b}$, $(CH_2)_rOC(O)R^{10b}$, $(CH_2)_rS(O)_pR^{10b}$, $(CH_2)_rS(O)_2NR^{10a}R^{10a'}$, $(CH_2)_rNR^{10a}S(O)_2R^{10b}$, C_{1-6} haloalkyl, a $(CH_2)_r$—C_{3-10} carbocyclic residue substituted with 0–5 R^{10c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{10c};

R^{10a} and $R^{10a'}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$—C_{3-10} carbocyclic residue substituted with 0–5 R^{10e}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{10e};

R^{10b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$—C_{3-6} carbocyclic residue substituted with 0–2 R^{10e}, and a $(CH_2)_r$-5-6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{10e};

R^{10c}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rNR^{10f}R^{10f}$, $(CH_2)_rOH$, $(CH_2)_rOC_{1-4}$ alkyl, $(CH_2)_rSC_{1-4}$ alkyl, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{10b}$, $(CH_2)_rC(O)NR^{10f}R^{10f}$, $(CH_2)_rNR^{10f}C(O)R^{10a}$, $(CH_2)_rC(O)OC_{1-4}$ alkyl, $(CH_2)_rOC(O)R^{10b}$, $(CH_2)_rC(=NR^{10f})NR^{10f}R^{10f}$, $(CH_2)_rS(O)_pR^{10b}$, $(CH_2)_rNHC(=NR^{10f})NR^{10f}R^{10f}$, $(CH_2)_rS(O)_2NR^{10f}R^{10f}$, $(CH_2)_rNR^{10f}S(O)_2R^{10b}$, and $(CH_2)_r$phenyl substituted with 0–3 R^{10e};

R^{10d}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, a C_{3-10} carbocyclic residue substituted with 0–3 R^{10c}, and a 5–6 membered heterocyclic system containing 1–4 heteroatoms selected from the group consisting of N, O, and S substituted with 0–3 R^{10c};

R^{10e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{10f}R^{10f}$, and $(CH_2)_r$phenyl;

R^{10f}, at each occurrence, is selected from H, C_{1-6} alkyl, and C_{3-6} cycloalkyl;

alternatively, R^9 and R^{10} join to form C_{3-7} cycloalkyl, 5–6-membered cyclic ketal, or =O;

with the proviso that when R^{10} is halogen, cyano, nitro, or bonded to the carbon to which it is attached through a heteroatom, R^9 is not halogen, cyano, or bonded to the carbon to which it is attached through a heteroatom;

R^{11}, is selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_qOH$, $(CH_2)_qSH$, $(CH_2)_qOR^{11d}$, $(CH_2)_qSR^{11d}$, $(CH_2)_qNR^{11a}R^{11a'}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{11b}$, $(CH_2)_rC(O)NR^{11a}R^{11a'}$, $(CH_2)_qNR^{11a}C(O)R^{11a}$, $(CH_2)_qNR^{11a}C(O)NHR^{11a}$, $(CH_2)_rC(O)OR^{11b}$, $(CH_2)_qOC(O)R^{11b}$, $(CH_2)_qS(O)_pR^{11b}$, $(CH_2)_qS(O)_2NR^{11a}R^{11a'}$, $(CH_2)_qNR^{11a}S(O)_2R^{11b}$, C_{1-6} haloalkyl, a $(CH_2)_r$—C_{3-10} carbocyclic residue substituted with 0–5 R^{11c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{11c};

R^{11a} and $R^{11a'}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$—C_{3-10} carbocyclic residue substituted with 0–5 R^{11e}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{11e};

R^{11b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$—C_{3-6} carbocyclic residue substituted with 0–2 R^{11e}, and a $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{11e};

R^{11c}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rNR^{11f}R^{11f}$, $(CH_2)_rOH$, $(CH_2)_rOC_{1-4}$ alkyl, $(CH_2)_rSC_{1-4}$ alkyl, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{11b}$, $(CH_2)_rC(O)NR^{11f}R^{11f}$, $(CH_2)_rNR^{11f}C(O)R^{11a}$, $(CH_2)_rC(O)OC_{1-4}$ alkyl, $(CH_2)_rOC(O)R^{11b}$, $(CH_2)_rC(=NR^{11f})NR^{11f}R^{11f}$, $(CH_2)_rNHC(=NR^{11f})NR^{11f}R^{11f}$, $(CH_2)_rS(O)_pR^{11b}$, $(CH_2)_rS(O)_2NR^{11f}R^{11f}$, $(CH_2)_rNR^{11f}S(O)_2R^{11b}$, and $(CH_2)_r$phenyl substituted with 0–3 R^{11e};

R^{11d}, at each occurrence, is selected from C_{1-6} alkyl substituted with 0–3 R^{11e}, C_{2-6} alkenyl, C_{2-6} alkynyl, and a C_{3-10} carbocyclic residue substituted with 0–3 R^{11c};

R^{11e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{11f}R^{11f}$, and $(CH_2)_r$phenyl;

R^{11f}, at each occurrence, is selected from H, C_{1-6} alkyl, and C_{3-6} cycloalkyl;

R^{12} is selected from H, C_{1-6} alkyl, $(CH_2)_qOH$, $(CH_2)_rC_{3-6}$ cycloalkyl, and $(CH_2)_r$phenyl substituted with 0–3 R^{12a};

R^{12a}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{9f}R^{9f}$, and $(CH_2)_r$phenyl;

alternatively, R^{11} and R^{12} join to form C_{3-7} cycloalkyl;

R^{13}, at each occurrence, is selected from $(CHR^{13a})OH$, $(CHR^{13a})OR^{13b}$, $(CHR^{13a})SH$, $(CHR^{13a})SR^{13b}$, $(CHR^{13a})NR^{13a}C(O)R^{13f}$, and (CHR^{13a}) $NR^{13a}S(O)_2R^{13f}$;

$R^{13a}$is selected from C_{1-7} alkyl;

R^{13b}, at each occurrence, is selected from $C(O)R^{13d}$, $C(O)NHR^{13d}$, C_{1-6} alkyl, C_{3-6} cycloalkyl, and phenyl substituted with 0–3 R^{13c};

R^{13c}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{9f}R^{9f}$, and $(CH_2)_r$phenyl;

R^{13d}, at each occurrence, is selected from C_{1-6} alkyl, C_{3-6} cycloalkyl, and phenyl substituted with 0–3 R^{6c};

R^{13e}, at each occurrence, is selected from H, C_{1-6} alkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, and phenyl where phenyl is substituted from 0–3 R^{13c};

R^{13f}, at each occurrence, is selected from C_{1-6} alkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, CF_3, and phenyl where phenyl is substituted from 0–3 R^{13c};

R^{15}, at each occurrence, is independently selected from C_{1-8} alkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, NO_2, CN, $(CHR')_rNR^{15a}R^{15a'}$, $(CHR')_rOH$, $(CHR')_rO(CHR')_rR^{15d'}$, $(CHR')_rSH$, $(CHR')_rC(O)H$, $(CHR)_rS(CHR')_rR^{15d'}$, $(CHR')_rC(O)OH$, $(CHR')_rC(O)(CHR')_rR^{15b'}$, $(CHR')_rC(O)NR^{15a}R^{15a'}$, $(CHR')_rNR^{15f}C(O)(CHR')_rR^{15b'}$, $(CHR')_rNR^{15f}C(O)NR^{15f}R^{15f}$, $(CHR')_rC(O)O(CHR')_rR^{15d'}$, $(CHR')_rOC(O)(CHR')_rR^{15b'}$, $(CHR')_rC(=NR^{15f})NR^{15a}R^{15a'}$, $(CHR')_rNHC(=NR^{15f})NR^{15f}R^{15f}$, $(CHR')_rS(O)_p(CHR')_rR^{15b'}$, $(CHR')_rS(O)_2NR^{15a}R^{15a'}$, $(CHR')_rNR^{15f}S(O)_2(CHR')_rR^{15b'}$, C_{1-6} haloalkyl, C_{2-8} alkenyl substituted with 0–3 R', C_{2-8} alkynyl substituted with 0–3 R', $(CHR')_r$phenyl substituted with 0–3 R^{15c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{15c};

R', at each occurrence, is selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, and $(CH_2)_r$phenyl substituted with R^{15c};

R^{15a} and $R^{15a'}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$—C_{3-10} carbocyclic residue substituted with 0–5 R^{15c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{15c};

R^{15b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$—C_{3-6} carbocyclic residue substituted with 0–3 R^{15c}, and $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{15c};

R^{15d}, at each occurrence, is selected from C_{2-8} alkenyl, C_{2-8} alkynyl, C_{1-6} alkyl substituted with 0–3 R^{15e}, a $(CH_2)_r$—C_{3-10} carbocyclic residue substituted with 0–3 R^{15c}, and a $(CH_2)_r$5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{15c};

R^{15e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{15f}R^{15f}$, and $(CH_2)_r$phenyl;

R^{15f}, at each occurrence, is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, and phenyl;

R^{16}, at each occurrence, is selected from C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, NO_2, CN, $(CHR')_rNR^{16a}R^{16a'}$, $(CHR')_rOH$, $(CHR')_rO(CHR')_rR^{16d'}$, $(CHR')_rSH$, $(CHR')_rC(O)H$, $(CHR')_rS(CHR')_rR^{6d'}$, $(CHR')_rC(O)OH$, $(CHR')_rC(O)(CHR')_rR^{16b'}$, $(CHR')_rC(O)NR^{16a}R^{16a'}$, $(CHR')_rNR^{16f}C(O)(CHR')_rR^{16b'}$, $(CHR')_rC(O)O(CHR')_rR^{16d'}$, $(CHR')_rOC(O)(CHR')_rR^{16b'}$, $(CHR')_rC(=NR^{16f})NR^{16a}R^{16a'}$, $(CHR')_rNHC(=NR^{16f})NR^{16f}R^{16f}$, $(CHR')_rS(O)_p(CHR')_rR^{16b'}$, $(CHR')_rS(O)_2NR^{16a}R^{16a'}$, $(CHR')_rNR^{16f}S(O)_2(CHR')_rR^{16b'}$, C_{1-6} haloalkyl, C_{2-8} alkenyl substituted with 0–3 R', C_{2-8} alkynyl substituted with 0–3 R', and $(CHR')_r$phenyl substituted with 0–3 R^{16e};

$R^{16a}$and $R^{16a'}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$—C_{3-10} carbocyclic residue substituted with 0–5 R^{16e}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{16e};

R^{16b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_rC_{3-6}$ carbocyclic residue substituted with 0–3 R^{16e}, and a $(CH_2)_r$ -5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{16e};

R^{16d}, at each occurrence, is selected from C_{2-8} alkenyl, C_{2-8} alkynyl, C_{1-6} alkyl substituted with 0–3 R^{16e}, a $(CH_2)_r$—C_{3-10} carbocyclic residue substituted with 0–3 R^{16e}, and a $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{16e};

R^{16e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{16f}R^{16f}$, and $(CH_2)_r$phenyl;

R^{16f}, at each occurrence, is selected from H, C_{1-5} alkyl, and C_{3-6} cycloalkyl, and phenyl;

v is selected from 0, 1, and 2;

t is selected from 1 and 2;

w is selected from 0 and 1;

r is selected from 0, 1, 2, 3, 4, and 5;

q is selected from 1, 2, 3, 4, and 5; and

p is selected from 0, 1, 2, and 3.

US 6,331,542 B1

PROTEASE INHIBITORS

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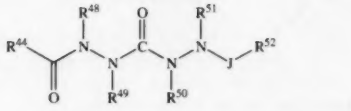
Division of application No. 08/793,915, filed as application No. PCT/US96/18000, filed on Oct. 30, 1996, now abandoned, Provisional application No. 60/008,108, filed on Oct. 30, 1995, Provisional application No. 60/007,473, filed on Nov. 22, 1995, Provisional application No. 60/008,992, filed on Dec. 21, 1995, Provisional application No. 60/013,748, filed on Mar. 20, 1996, Provisional application No. 60/013,764, filed on Mar. 20, 1996, Provisional application No. 60/013,747, filed on Mar. 20, 1996, Provisional application No. 60/017,455, filed on May 17, 1996, Provisional application No. 60/017,892, filed on May 17, 1996, Provisional application No. 60/022,047, filed on Jul. 22, 1996, Provisional application No. 60/023,494, filed on Aug. 7, 1996. This application Apr. 19, 2000, Appl. No. 551,968. This patent is subject to a terminal disclaimer.

Int. Cl. A61K *31/5375;31/4409;* **C07D** *401/12;265/30*

U.S. Cl. 514—237.8 **13 Claims**

1. A compound according of Formula IX:

IX



wherein:

J is C(O), or SO_2;

Ar is phenyl, or naphthyl; optionally substituted by one or more of Ph—C_{0-6}alkyl, Het—C_{0-6}alkyl, C_{1-6}alkoxy, Ph—C_{0-6}alkoxy, Het—C_{0-6} alkoxy, OH, $(CH_2)_{1-6}NR^{58}R^{59}$, or $O(CH_2)_{1-6}NR^{58}R^{59}$;

R^{44} is $CH(R^{53})NR^{45}R^{54}$, $CH(R^{55})Ar$, or C_{3-6}alkyl;

R^{45}, R^{48}, R^{49}, R^{50}, and R^{51} are independently H, C_{1-6}alkyl, Ar—C_{0-6}alkyl, or Het—C_{0-6}alkyl;

R^{47} is H, C_{1-6}alkyl, Ar—C_{0-6}alkyl, pyridinylmethoxy or Het—C_{0-6}alkyl;

R^{52} is Ar, Het, $CH(R^{56})Ar$, $CH(R^{56})OAr$, $N(R^{56})Ar$, C_{1-6} alkyl, or $CH(R^{56})NR^{46}R^{57}$;

R^{53} is C_{2-6}alkyl, Ar—C_{0-6}alkyl, or Het—C_{0-6}alkyl; or

R^{53} and R^{45} may be connected to form a pyrrolidine or piperidine ring;

R^{54} and R^{57} are independently R^{47}, $R^{47}C(O)$, $R^{47}C(S)$, or $R^{47}OC(O)$;

R^{56}, R^{58}, and R^{59} are independently H, C_{1-6}alkyl, Ar—C_{0-6}alkyl, or Het—C_{0-6}alkyl;

or a pharmaceutically acceptable salts, hydrates or solvates thereof.

US 6,331,543 B1

NITROSATED AND NITROSYLATED PHOSPHODIESTERASE INHIBITORS, COMPOSITIONS AND METHODS OF USE

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Continuation-in-part of application No. 09/145,142, filed on Sep. 1, 1998, now Pat. No. 5,958,926, which is a continuation-in-part of application No. 08/740,764, filed on Nov. 1, 1996, now Pat. No. 5,874,437, and a continuation-in-part of application No. PCT/US97/19870, filed on Oct. 31, 1997. This application Sep. 1, 1999, Appl. No. 387,727.

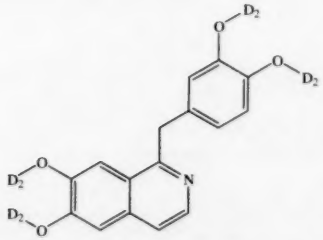
Int. Cl. A61K *31/4985;* **C07D** *471/14*

U.S. Cl. 514—250 **94 Claims**

1. A compound of formula (XI), formula (XII), formula (XIII), formula (XIV), formula (XV), formula (XVI), formula (XVII), formula (XVIII), formula (XIX), or a pharmaceutically acceptable salt thereof:

wherein the compound of formula (XI) is:

XI



wherein

D_2 is a hydrogen, a lower alkyl or D;

D is:

(i) —NO,

(ii) $—NO_2$,

(iii) $—CH(R_d)—O—C(O)—Y—Z—(C(R_e)(R_f))_p—T—Q$,

(iv) $—C(O)—Y—Z—(G—(C(R_e)(R_f))_b—T—Q)_p$;

(v) $—P—Z—(G—(C(R_e)(R_f))_b—T—Q)_p$;

(vi) $—P_1—B_1—W—B_f—L_r—E_s—(C(R_e)(R_f))_w—E_c—(C(R_e)(R_f))_x—L_d—(C(R_e)(R_f))_y—L_t—E_j—L_g—(C(R_e)(R_f))_z—T—Q$; or

(vii) $—P_1—F'_n—L_r—E_s—(C(R_e)(R_f))_w—E_c—(C(R_e)(R_f))_x—L_d—(C(R_e)(R_f))_y—L_t—E_j—L_g—(C(R_e)(R_f)O_z—T—Q$;

R_d is a hydrogen, a lower alkyl, a cycloalkyl, an aryl or an arylalkyl;

Y is oxygen, $S(O)_o$, lower alkyl or NR_i;

o is an integer from 0 to 2;

R_i is a hydrogen, an alkyl, an aryl, an alkylcarboxylic acid, an aryl carboxylic acid, an alkylcarboxylic ester, an arylcarboxylic ester, an alkylcarboxamido, an arylcarboxamido, an alkylaryl, an alkylsulfinyl, an alkylsulfonyl, an arylsulfinyl, an arylsulfonyl, a sulfonamido, a carboxamido, a carboxylic ester, $—CH_2—C(T—Q)(R_e)(R_f)$, or $—(N_2O_2^-)^-\cdot M^+$, wherein M^+ in an organic or inorganic cation;

R_e and R_f are each independently a hydrogen, an alkyl, a cycloalkoxy, a halogen, a hydroxy, an hydroxyalkyl, an alkoxyalkyl, an arylheterocyclic ring, an alkylaryl, a cycloalkylalkyl, a heterocyclicalkyl, an alkoxy, a haloalkoxy, an amino, an alkylamino, a dialkylamino, an arylamino, a diarylamino, an alkylarylamino, an alkoxyhaloalkyl, a haloalkoxy, a sulfonic acid, an alkylsulfonic acid, an arylsulfonic acid, an arylalkoxy, an alkylthio, an arylthio, a cyano, an aminoalkyl, an aminoaryl, an alkoxy, an aryl, an arylalkyl, an alkylaryl, a carboxamido, a alkyl carboxamido, an aryl carboxamido, an amidyl, a carboxyl, a carbamoyl, an alkylcarboxylic acid, an arylcarboxylic acid, an ester, a carboxylic ester, an alkylcarboxylic ester, an arylcarboxylic ester, a haloalkoxy, a sulfonamido, an alkylsulfonamido, an arylsulfonamido, a urea, a nitro, —T—Q, or $(C(R_e)(R_f))_k—T—Q$, or R_e and R_f taken together with the carbon atoms to which they are attached are a carbonyl, a methanthial, a heterocyclic ring, a cycloalkyl group or a bridged cycloalkyl group;

k is an integer from 1 to 3;

p is an integer from 1 to 10;

T is independently a covalent bond, oxygen, $S(O)_o$, or NR_i;

Z is a covalent bond, an alkyl, an aryl, an arylalkyl, an alkylaryl, a heteroalkyl, or $(C(R_e)(R_f))_p$;

Q is —NO or $—NO_2$;

G is a covalent bond, —T—C(O)—, —C(O)—T—or T;

b is an integer from 0 to 5;

P is a carbonyl, a phosphoryl or a silyl;

l and t are each independently an integer from 1 to 3;

r, s, c, d, g, i and j are each independently an integer from 0 to 3;

w, x, y and z are each independently an integer from 0 to 10;

P_1 is a covalent bond or P;

B at each occurrence is independently an alkyl group, an aryl group, or $(C(R_e)(R_f))_p$;

E at each occurrence is independently —T—, an alkyl group, an aryl group, or $—(CH_2CH_2O)_q$;

q is an integer of from 1 to 5;

L at each occurrence is independently —C(O)—, —C(S)—,—T—, a heterocyclic ring, an aryl group, an alkenyl group, an alkynyl group, an arylheterocyclic ring, or $—(CH_2CH_2O)_q$;

W is oxygen, $S(O)_o$, or NR_i;

F' at each occurrence is independently selected from B or carbonyl;

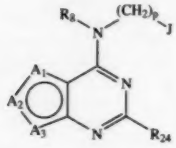
n is an integer from 2 to 5;

with the proviso that when R_i is $—CH_2—C(T—Q)(R_e)(R_f)$ or $—(N_2O_2)M^+$, or R_e or R_f are T—Q or $(C(R_e)(R_f))_k—T—Q$, then the "—T—Q" subgroup designated in D can be a hydrogen, an alkyl, an alkoxy, an alkoxyalkyl, an aminoalkyl, a hydroxy, or an aryl; and

with the proviso that at least one D_2 must be D;

wherein the compound of formula (XII) is:

XII

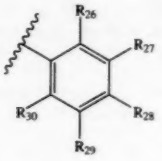


wherein,

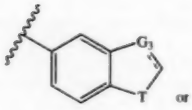
R_8 is a hydrogen, a lower alkyl group or a haloalkyl group;

J is:

(i)

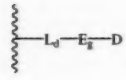


(ii)



or

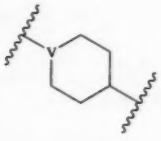
(iii)



R_{24} is hydrogen or K—G—D;

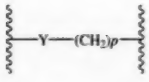
K is:

(i)



or

(ii)



G_3 is (CH), (CH_2), oxygen, sulfur or nitrogen;

V is carbon or nitrogen;

A_1, A_2 and A_3 comprise the other subunits of a 5- or 6-membered monocyclic aromatic ring and each is independently (i) C—R_{23} wherein R_{23} at each occurrence is independently D, a hydrogen, a halogen, an alkoxy, a nitrile, an alkyl, an arylalkyl, an alkylaryl, a carboxamido, a carboxyl, a haloalkyl, an alkoxyalkyl, an alkoxyaryl or a nitro; (ii) sulfur; (iii) oxygen; and (iv) B_a=B_b wherein B_a and B_b are each independently nitrogen or C—R_{23} wherein R_{23} at each occurrence is as defined herein; and

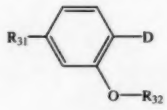
R_{26}, R_{27}, R_{28}, R_{29}, and R_{30} are each independently a hydrogen, a halogen, a hydroxy, a haloalkyl, an alkoxy, an alkoxyalkyl, an alkoxyaryl, an alkoxyhaloalkyl, a nitrile, a nitro, an alkyl, an alkylaryl, an arylalkyl, a hydroxy alkyl, a carboxamido, or a carboxyl;

d, g, p, E, L, G, T, Y and D are as defined herein;

with the proviso that at least one of the variables A_1, A_2, A_3, J or R_{24} must contain the element "—T—Q" or "D";

wherein the compound of formula (XIII) is:

XIII



wherein,

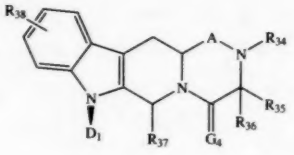
R_{31} is an alkyl, a halogen, a haloalkyl, or a haloalkoxy;

R_{32} is D, or —C(O)—R_8;

D_1 is D or hydrogen; and D and R_8 are as defined herein;

wherein the compound of formula (XIV) is:

XIV



wherein

A is CH_2, a carbonyl or a methanethial;

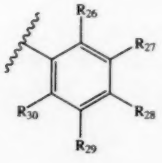
G_4 is oxygen or sulfur;

R_{34} is hydrogen, lower alkyl, alkenyl, alkynyl or L_r—E_s—$(C(R_e)(R_f))_w$—E_c—$(C(R_e)(R_f))_x$— L_d—$(C(R_e)(R_f))_y$—L_f—L_j—E_g— $(C(R_e)(R_f))_z$—T—Q; R_{35} and R_{36} are each independently a hydrogen, a lower alkyl, an arylalkyl, an alkylaryl, a cycloalkylalkyl, a heterocyclicalkyl, T—Q or $(C(R_e)(R_f))_k$—T—Q; or R_{35} and R_{36} taken together with the carbon to which they are attached are a carbonyl group, a methanethial group, a heterocyclic group or a cycloalkyl group; or R_{34} and R_{35} taken together with the carbon to which they are attached are $(C(R_g)(R_h))_u$ or —$C(R_g)(R_h)$—$C(R_g)$=$C(R_g)$—$(C(R_g)(R_h))_v$, wherein u is an integer of 3 or 4, v is an integer of 1 or 2 and R_g and R_h at each occurrence is independently a hydrogen, an alkyl, T—Q or $(C(R_e)(R_f))_k$—T—Q;

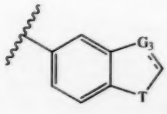
R_{36} is a hydrogen, a halogen or a lower alkyl;

R_{37} is:

(i)



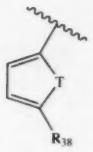
(ii)



or

-continued

(iii)



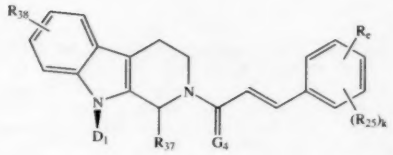
D_1 is D or hydrogen;

c, d, g, i, j, k, r, s, w, x, y, z, E, L, G_3, T, Q, R_e, R_f, R_{26}, R_{27}, R_{28}, R_{29}, R_{30} and R_{38} are a defined herein;

with the proviso that D_1 must be D if R_{34}, R_{35}, R_{36} or R_{37} do not contain the element "T—Q";

wherein the compound of formula (XV) is:

XV



wherein

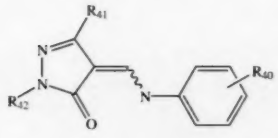
R_{25} at each occurrence is independently a hydrogen, an alkyl, a cycloalkoxy, a halogen, a hydroxy, an hydroxyalkyl, an alkoxyalkyl, an arylheterocyclic ring, an alkylaryl, an arylalkoxy, an alkylthio, an arylthio, a cyano, an aminoalkyl, an amino an alkoxy, an aryl, an arylalkyl, a carboxamido, a alkyl carboxamido, an aryl carboxamido, a carboxyl, a carbamoyl, an alkylcarboxylic acid, an arylcarboxylic acid, a carboxylic ester, an alkylcarboxylic ester, an arylcarboxylic ester, a carboxamido, an alkylcarboxamido, an arylcarboxamido, a haloalkoxy, a sulfonamido, a urea, a nitro, or L_r—E_s—$(C(R_e)(R_f))_w$—E_t—$(C(R_e)(R_f))_x$—L_{cf}— $(C(R_e)(R_f))_y$—L_i—E_j—L_g—$(C(R_e)(R_f))_z$—T—Q;

c, d, g, i, j, k, r, s, w, x, y, z, G_4, D_1, E, L, T, Q, R_e, R_f, R_{37} and R_{38} are as defined herein;

with the proviso that D_1 must be D if R_e or R_{25} do not contain the element "T—Q";

wherein the compound of formula (XVI) is:

XVI



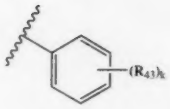
wherein

R_{40} is a hydrogen, a lower alkyl, a haloalkyl, a halogen, an alkoxy, an alkenyl, an alkynyl, a carbamoyl, a sulfonamido or L_r—E_s—$(C(R_e)(R_f))_w$—E_t— $(C(R_e)(R_f))_x$—L_{cf}—$(C(R_e)(R_f))_y$—L_i— E_j—L_g—$(C(R_e)(R_f))_z$—T—Q;

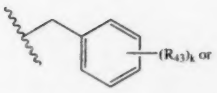
R_4 is a lower alkyl, a hydroxyalkyl, an alkylcarboxylic acid, an alkylcarboxylic ester an alkylcarboxamido or L_r—E_s—$(C(R_e)(R_f))_w$— E_t—$(C(R_e)(R_f))_x$—L_{cf}—$(C(R_e)(R_f))_y$—L_i—E_j—L_g—$(C(R_e)(R_f))_z$—T—Q; and

R_{42} is:

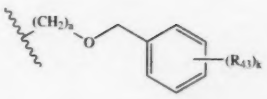
(i)



(ii)



(iii)



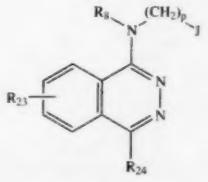
R_{43} at each occurrence is independently an amino, a cyano, a halogen, a nitro group, a carboxyl, a carbamoyl, a sulfonic acid, a sulfonic ester, a sulfonamido, a heterocyclic ring, a carboxamido, a carboxylic ester, an ester, an amidyl, a phosphoryl or L_r—E_s—$(C(R_e)(R_f))_w$—E_t—$(C(R_e)(R_f))_x$—L_{cf}—$(C(R_e)(R_f))_y$—L_i—E_j—L_g—$(C(R_e)(R_f))_z$—T—Q; and

c, d, g, i, j, k, r, S, w, x, y, z, E, L, T, Q, R_e, and R_f are as defined herein;

with the proviso that at least one of R_{40}, R_4, or R_{43} must contain the element "T—Q";

wherein the compound of formula (XVII) is:

XVII

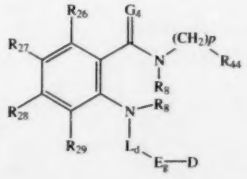


wherein R_8, R_{23}, R_{24} p and J are as defined herein;

with the proviso that at least one R_{24} or J must contain the element "—T—Q" or

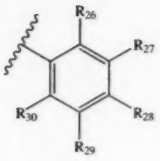
wherein the compound of formula (XVIII) is:

XVIII

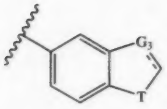


wherein R_{44} is:

(i)

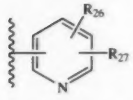


(ii)



or

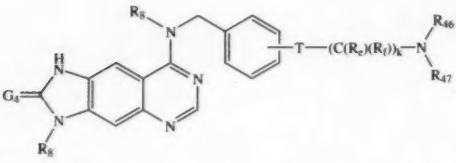
(iii)



wherein d, g, p, D, E, L, G_3, G_4, T, R_8, R_{26}, R_{27}, R_8, R_{29}, and R_{30} are as defined herein;

wherein the compound of formula (XIX) is:

XIX



wherein,

R_{46} and R_{47} are each independently a lower alkyl, hydroxyalkyl or D, or R_{46} and R_{47} taken together with the nitrogen atom to which they are attached are a heterocyclic ring,

G_4, T, R_8, and k are as defined herein;

with the proviso that at least one of the variables R_{46} or R_{47} must be D or when the variables taken together are a heterocyclic ring, the ring must contain NR_1, wherein R_1 must contain the element "T—Q".

US 6,331,544 B1

INDANE OR DIHYDROINDOLE DERIVATIVES

Jens Kristian Perregaard, Jaegerspris; Ivan Mikkelsen, Koge, and Henrik Pedersen, Bronshoj, all of Denmark, assignors to H. Lundbeck A/S, Valby Copenhagen, Denmark

PCT No. PCT/DK97/00588, § 371 Date Aug. 3, 1999, § 102(e) Date Aug. 3, 1999, PCT Pub. No. WO98/28290, PCT Pub. Date Jul. 2, 1998

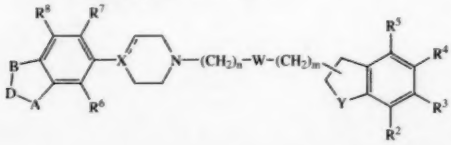
PCT Filed Dec. 19, 1997, Appl. No. 331,557

Claims priority, application Denmark, Dec. 20, 1996, 1469/96

Int. Cl. A61K *31/496;* **C07D** *405/10;411/10;409/10*

U.S. Cl. 514—252.13 **17 Claims**

1. An indane compound of formula I



wherein A and B are independently O or S;

D is a methylene group optionally substituted with one or two C_{1-4} alkyl groups;

Y is CH_2;

W is a bond, and n+m is 1, 2, 3, 4, 5, or 6;

W is CO, SO, or SO_2, n is 2,3,4, or 5 and m is 0, 1, 2, or 3, provided that n+m is not more than 6; or

W is O, S, n is 2, 3, 4, or 5 and m is 0, 1, 2, or 3, provided that n+m is not more than 6, and

X is N and the dotted line is absent;

R^2–R^5 are independently selected from hydrogen, halogen, cyano, nitro, C_{1-6} alk(en/yn)yl, C_{1-6} alkoxy, C_{1-6} alkylthio, hydroxy, C_{3-8} cycloalk(en)yl, C_{3-8}, cycloalk(en)yl-C_{1-6} alk(en/yn)yl, C_{1-6} alkylcarbonyl, phenylcarbonyl, halogen substituted phenylcarbonyl, trifluoromethyl, trifluoromethylsulfonyloxy and C_{1-6} alkylsulfonyl;

R^6–R^8 are independently selected from hydrogen, halogen, cyano, nitro, C_{1-6}-alk(en/yn)yl, C_{1-6}-alkoxy, C_{1-6}-alkylthio, hydroxy, trifluoromethyl, or C_{1-6} alkylsulfonyl; or a pharmaceutically acceptable acid addition salt thereof.

US 6,331,545 B1

HETEROCYCYCLIC PIPERIDINES AS MODULATORS OF CHEMOKINE RECEPTOR ACTIVITY

Soo S. Ko, 7 Aston Cir., Hockessin, Del. 19707; George V. DeLucca, 2703 Marklyn Dr., Wilmington, Del. 19810; John V. Duncia, 4 Markham Ct., Hockessin, Del. 19707; Joseph B. Santella, III, 250 Lewis Rd., Springfield, Pa. 19064, and Dean A. Wacker, 9 Balmoral Dr., Chadds Ford, Pa. 19317

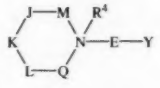
Provisional application No. 60/112,714, filed on Dec. 18, 1998. This application Dec. 17, 1999, Appl. No. 465,949.

Int. Cl. A61K *31/506;* **C07D** *401/06;403/06*

U.S. Cl. 514—253.01 **53 Claims**

1. A compound of formula I:

(I)



or stereoisomers or pharmaceutically acceptable salts thereof, wherein:

M is absent or selected from CH_2, CHR^5, CHR^{13}, $CR^{13}R^{13}$, and CR^5R^{13};

Q is selected from CH_2, CHR^5, CHR^{13} $CR^{13}R^{13}$ and CR^5R^{13};

J, K, and L are independently selected from CH_2, CHR^5, CHR^6, CR^6R^6 and CR^5R^6;

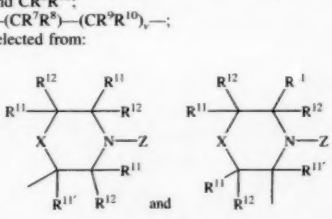
with the provisos:

1) at least one of M, J, K, L, or Q contains an R^5; and

2) when M is absent, J is selected from CH_2, CHR^5, CHR^{13}, and CR^5R^{13};

E is $—(CR^7R^8)—(CR^9R^{10})_v—$;

Y is selected from:



X is NR^{14};

Z is selected from $C(O)R^3$, $S(O)_2R^3$, $C(O)OR^3$, $C(O)NR^2R^3$, $C(=NR^1)NR^2R^3$, $C(=CHCN)NR^2R^3$, $C(=CHNO_2)NR^2R^3$, $C(=C(CN)_2)NR^2R^3$, and $(CR'R')_t$-phenyl substituted with 0–5 R^{15};

R', at each occurrence, is selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_tC_{3-6}$ cycloalkyl, and $(CH_2)_t$phenyl substituted with R^{15c};

R^1 is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, OH, CN, and $(CH_2)_w$phenyl;

R^2 is selected from H, C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, and a $(CH_2)_r$-C_{3-10} carbocyclic residue substituted with 0–5 R^{2a};

R^{2a}, at each occurrence, is selected from C_{1-4} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rNR^{2b}R^{2b}$, $(CH_2)_rOH$, $(CH_2)_rOR^{2c}$, $(CH_2)_rSH$, $(CH_2)_rSR^{2c}$, $(CH_2)_rC(O)R^{2b}$, $(CH_2)_rC(O)NR^{2b}R^{2b}$, $(CH_2)_rNR^{2b}C(O)R^{2b}$, $(CH_2)_rC(O)OR^{2b}$, $(CH_2)_rOC(O)R^{2c}$, $(CH^2)_rCH(=NR^{2b})NR^{2b}R^{2b}$, $(CH_2)_rNHC(=NR^{2b})NR^{2b}R^{2b}$, $(CH_2)_rS(O)_pR^{2c}$, $(CH_2)_rS(O)_2NR^{2b}R^{2b}$, $(CH_2)_rNR^{2b}S(O)_2R^{2c}$, and $(CH_2)_r$phenyl;

R^{2b}, at each occurrence, is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, and phenyl;

R^{2c}, at each occurrence, is selected from C_{1-5} alkyl, C_{3-6} cycloalkyl, and phenyl;

R^3 is selected from a $CR^{3s}R^{3s}R^{3s}$, $(CR^{3s}R^{3s})_rC_{3-10}$ carbocyclic residue substituted with 0–5 R^{15} and a $(CR^{3s}R^{3s})_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{15};

R^{3s} and R^{3s}, at each occurrence, are selected from H, C_{1-6} alkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, and phenyl;

R^4 is absent, taken with the nitrogen to which it is attached to form an N-oxide, or selected from C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, $(CH_2)_qC(O)R^{4b}$, $(CH_2)_qC(O)NR^{4a}R^{4a}$, $(CH_2)_qC(O)OR^{4b}$, and a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–3 R^{4c};

R^{4a} and R^{4a}, at each occurrence, are selected from H, C_{1-6} alkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, and phenyl;

R^{4b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, $(CH_2)_rC_{3-6}$ cycloalkyl, C_{2-8} alkynyl, and phenyl;

R^{4c}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, $(CH_2)_rOH$, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{4a}R^{4a}$, and $(CH_2)_r$phenyl;

R^5 is selected from a $(CR^{5s}R^{5s})_r$-C_{3-10} carbocyclic residue substituted with 0–5 R^{16} and a $(CR^{5s}R^{5s})_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{16};

R^{5s} and R^{5s}, at each occurrence, are selected from H, C_{1-6} alkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, and phenyl;

R^6, at each occurrence, is selected from C_{1-4} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, $(CF_2)_rCF_3$, CN, $(CH_2)_rNR^{6a}R^{6a}$, $(CH_2)_rOH$, $(CH_2)_rOR^{6b}$, $(CH_2)_rSH$, $(CH_2)_rSR^{6b}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{6b}$, $(CH_2)_rC(O)NR^{6a}R^{6a}$, $(CH_2)_rNR^{6a}C(O)R^{6a}$, $(CH_2)_rC(O)OR^{6b}$, $(CH_2)_rOC(O)R^{6b}$, $(CH_2)_rS(O)_pR^{6b}$, $(CH_2)_rS(O)_2NR^{6a}R^{6a}$, $(CH_2)_rNR^{6d}S(O)_2$R6b, and $(CH_2)_r$phenyl substituted with 0–3 R^{6c};

R^{6a} and R^{6a}, at each occurrence, are selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, and phenyl substituted with 0–3 R^{6c};

R^{6b}, at each occurrence, is selected from C_{1-6} alkyl, C_{3-6} cycloalkyl, and phenyl substituted with 0–3 R^{6c};

R^{6c}, at each occurrence, is selected from C_{1-6} alkyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, $(CH_2)_rOH$, $(CH_2)_rSC_{1-5}$ alkyl, and $(CH_2)_rNR^{6d}R^{6d}$;

R^{6d}, at each occurrence, is selected from H, C_{1-6} alkyl, and C_{3-6} cycloalkyl;

R^7 is selected from H, C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_qOH$, $(CH_2)_qSH$, $(CH_2)_qOR^{7d}$, $(CH_2)_qSR^{7d}$, $(CH_2)_qNR^{7a}R^{7a}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{7b}$, $(CH_2)_rC(O)NR^{7a}R^{7a}$, $(CH_2)_qNR^{7a}C(O)R^{7a}$, $(CH_2)_rC(O)OR^{7b}$, $(CH_2)_qOC(O)R^{7b}$, $(CH_2)_qS(O)_pR^{7b}$, $(CH_2)_qS(O)2NR^{7a}R^{7a}$, $(CH_2)_qNR^{7a}S(O)_2R^{7b}$, C_{1-6} haloalkyl, a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–3 R^{7c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{7c};

R^{7a} and R^{7a}, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–5 R^{7e}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{7e};

R^{7b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_rC_{3-6}$ carbocyclic residue substituted with 0–2 R^{7e}, and a $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{7e};

R^{7c}, at each occurrence, is selected from C_{1-4} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rNR^{7f}R^{7f}$, $(CH_2)_rOH$, $(CH_2)_rOC_{1-4}$ alkyl, $(CH_2)_rSC_{1-4}$ alkyl, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{7b}$, $(CH_2)_rC(O)NR^{7f}R^{7f}$, $(CH_2)_rNR^{7f}C(O)R^{7a}$, $(CH_2)_rC(O)OC_{1-4}$ alkyl, $(CH_2)_rOC(O)R^{7b}$, $(CH_2)_rC(=NR^{7f})NR^{7f}R^{7f}$, $(CH_2)_rS(O)_pR^{7b}$, $(CH_2)_rNHC(=NR^{7f})NR^{7f}R^{7f}$, $(CH_2)_rS(O)2NR^{7f}R^{7f}$, $(CH_2)_rNR^{7f}S(O)_2R^{7b}$, and $(CH_2)_r$phenyl substituted with 0–3 R^{7e};

R^{7d}, at each occurrence, is selected from C_{1-6} alkyl substituted with 0–3 R^{7e}, alkenyl, alkynyl, and a C_{3-10} carbocyclic residue substituted with 0–3 R^{7c};

R^{7e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{7f}R^{7f}$, and $(CH_2)_r$phenyl;

R^{7f}, at each occurrence, is selected from H, C_{1-5} alkyl, and C_{3-6} cycloalkyl;

R^8 is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, and $(CH_2)_r$phenyl substituted with 0–3 R^{8a};

R^{8a}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{7f}R^{7f}$, and $(CH_2)_r$phenyl;

alternatively, R^7 and R^8 join to form C_{3-7} cycloalkyl, or $=NR^{8b}$;

R^{8b} is selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, OH, CN, and $(CH_2)_r$phenyl;

R^9 is independently selected from H, C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, F, Cl, Br, I, NO_2, CN, $(CH_2)_rOH$, $(CH_2)_rSH$, $(CH_2)_rOR^{9d}$, $(CH_2)_rSR^{9d}$, $(CH_2)_rNR^{9a}R^{9a}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{9b}$, $(CH_2)_rC(O)NR^{9a}R^{9a}$, $(CH_2)_rNR^{9a}C(O)R^{9a}$, $(CH_2)_rNR^{9a}C(O)H$, $(CH_2)_rC(O)OR^{9b}$, $(CH_2)_rOC(O)R^{9b}$, $(CH_2)_rS(O)_pR^{9b}$, $(CH_2)_rS(O)_2NR^{9a}R^{9a}$, $(CH_2)_rNR^{9d}S(O)_2R^{9b}$, C_{1-6} haloalkyl, a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–5 R^{9c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{9c};

R^{9s} is independently selected from H, C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, F, Cl, Br, I, NO_2, CN, $(CH_2)_rOH$, $(CH_2)_rSH$, $(CH_2)_rOR^{9d}$, $(CH_2)_rSR^{9d}$, $(CH_2)_rNR^{9a}R^{9a}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{9b}$, $(CH_2)_rC(O)NR^{9a}R^{9a}$, $(CH_2)_rNR^{9a}C(O)R^{9a}$, $(CH_2)_rNR^{9a}C(O)H$, $(CH_2)_rC(O)OR^{9b}$, $(CH_2)_rOC(O)R^{9b}$, $(CH_2)_rS(O)_pR^{9b}$, $(CH_2)_rS(O)_2NR^{9a}R^{9a}$, $(CH_2)_rNR^{9d}S(O)_2R^{9b}$, C_{1-6} haloalkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, $(CH_2)_q$-phenyl substituted with 0–5 R^{9c}, and a $(CH_2)_q$-5-10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{9c};

R^{9a} and R^{9a}, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–5 R^{9c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{9c};

R^{9b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_rC_{3-6}$ carbocyclic residue substituted with 0–2 R^{9c}, and a $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{9c};

R^{9c}, at each occurrence, is selected from C_{1-4} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rNR^{9f}R^{9f}$, $(CH_2)_rOH$, $(CH_2)_rOC_{1-4}$ alkyl, $(CH_2)_rSC_{1-4}$ alkyl, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{9b}$, $(CH_2)_rC(O)NR^{9f}R^{9f}$, $(CH_2)_rNR^{9f}C(O)R^{9a}$, $(CH_2)_rC(O)OC_{1-4}$ alkyl, $(CH_2)_rOC(O)R^{9b}$, $(CH_2)_rC(=NR^{9f})NR^{9f}R^{9f}$, $(CH_2)_rS(O)_pR^{9b}$, $(CH_2)_rNHC(=NR^{9f})NR^{9f}R^{9f}$, $(CH_2)_rS(O)_2NR^{9f}R^{9f}$, $(CH_2)_rNR^{9f}S(O)_2R^{9b}$, and $(CH_2)_r$phenyl substituted with 0–3 R^{9c};

R^{9d}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, a C_{3-10} carbocyclic residue substituted with 0–3 R^{9c}, and a 5–6 membered heterocyclic system containing 1–4

heteroatoms selected from the group consisting of N, O, and S substituted with 0–3 R^{9c};

R^{9c}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{9f}R^{9f}$, and $(CH_2)_r$phenyl;

R^{9f}, at each occurrence, is selected from H, C_{1-5} alkyl, and C_{3-6} cycloalkyl;

R^{10} is independently selected from H, C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, F, Cl, Br, I, NO_2, CN, $(CH_2)_rOH$, $(CH_2)_rOR^{10d}$, $(CH_2)_rSR^{10d}$, $(CH_2)_rNR^{10a}R^{10a\prime}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{10b}$, $(CH_2)_rC(O)NR^{10a}R^{10a\prime}$, $(CH_2)_rNR^{10a}C(O)R^{10a}$, $(CH_2)_rNR^{10a}C(O)H$, $(CH_2)_rC(O)OR^{10b}$, $(CH_2)_rOC(O)R^{10b}$, $(CH_2)_rS(O)_pR^{10b}$, $(CH_2)_rS(O)_2NR^{10a}R^{10a\prime}$, $(CH_2)_rNR^{10a}S(O)_2R^{10b}$, C_{1-6} haloalkyl, a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–5 R^{10c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R_{10c};

R^{10a} and $R^{10a\prime}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–5 R^{10c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{10c};

R^{10b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_rC_{3-6}$ carbocyclic residue substituted with 0–2 R^{10c}, and a $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{10c};

R^{10c}, at each occurrence, is selected from C_{1-4} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rNR^{10f}R^{10f}$, $(CH_2)_rOH$, $(CH_2)_rOC_{1-4}$ alkyl, $(CH_2)_rSC_{1-4}$ alkyl, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{10b}$, $(CH_2)_rC(O)NR^{10f}R^{10f}$, $(CH_2)_rNR^{10f}C(O)R^{10a}$, $(CH_2)_rC(O)OC_{1-4}$ alkyl, $(CH_2)_rOC(O)R^{10b}$, $(CH_2)_rC(=NR^{10f})NR^{10f}R^{10f}$, $(CH_2)_rS(O)_pR^{10b}$, $(CH_2)_rNHC(=NR^{10f})NR^{10f}R^{10f}$, $(CH_2)_rS(O)_2NR^{10f}R^{10f}$, $(CH_2)_rNR^{10f}S(O)_2R^{10b}$, and $(CH_2)_r$phenyl substituted with 0–3 R^{10c};

R^{10d}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, a C_{3-10} carbocyclic residue substituted with 0–3 R^{10c}, and a 5–6 membered heterocyclic system containing 1–4 heteroatoms selected from the group consisting of N, O, and S substituted with 0–3 R^{10c};

R^{10e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{10f}R^{10f}$, and $(CH_2)_r$phenyl;

R^{10f}, at each occurrence, is selected from H, C_{1-5} alkyl, and C_{3-6} cycloalkyl;

with the proviso that when R^{10} is —OH, R^9 is not halogen, cyano, or bonded to the carbon to which it is attached through a heteroatom;

alternatively, R^9 and R^{10} join to form C_{3-7} cycloalkyl;

R^{11} is selected from H, C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_qOH$, $(CH_2)_qSH$, $(CH_2)_qOR^{11d}$, $(CH_2)_qSR^{11d}$, $(CH_2)_qNR^{11a}R^{11a\prime}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{11b}$, $(CH_2)_rC(O)NR^{11a}R^{11a\prime}$, $(CH_2)_qNR^{11a}C(O)R^{11a}$, $(CH_2)_rC(O)OR^{11b}$, $(CH_2)_qOC(O)R^{11b}$, $(CH_2)_qS(O)_pR^{11b}$, $(CH_2)_qS(O)_2NR^{11a}R^{11a\prime}$, $(CH_2)_qNR^{11a}S(O)_2R^{11b}$, C_{1-6} haloalkyl, a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–5 R^{11c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{11c};

$R^{11\prime}$ is selected from H, C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_qOH$, $(CH_2)_qSH$, $(CH_2)_qOR^{11d}$, $(CH_2)_qSR^{11d}$, $(CH_2)_qNR^{11a}R^{11a\prime}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{11b}$, $(CH_2)_rC(O)NR^{11a}R^{11a\prime}$, $(CH_2)_qNR^{11a}C(O)R^{11a}$, $(CH_2)_rC(O)OR^{11b}$, $(CH_2)_qOC(O)R^{11b}$, $(CH_2)_qS(O)_pR^{11b}$, $(CH_2)_qS(O)_2NR^{11a}R^{11a\prime}$, $(CH_2)_qNR^{11a}S(O)_2R^{11b}$, C_{1-6} haloalkyl, a $(CH_2)_rC_{3-6}$ cycloalkyl, $(CH_2)_q$-phenyl substituted with 0–5 R^{11c}, and a $(CH_2)_q$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{11c};

R^{11a} and $R^{11a\prime}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–5 R^{11e}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{11e};

R^{11b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_rC_{3-6}$ carbocyclic residue substituted with 0–2 R^{11e}, and a $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{11e};

R^{11c}, at each occurrence, is selected from C_{1-4} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rNR^{11f}R^{11f}$, $(CH_2)_rOH$, $(CH_2)_rOC_{1-4}$ alkyl, $(CH_2)_rSC_{1-4}$ alkyl, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{11b}$, $(CH_2)_rC(O)NR^{11f}R^{11f}$, $(CH_2)_rNR^{11f}C(O)R^{11a}$, $(CH_2)_rC(O)OC_{1-4}$ alkyl, $(CH_2)_rOC(O)R^{11b}$, $(CH_2)_rC(=NR^{11f})NR^{11f}R^{11f}$, $(CH_2)_rNHC(=NR^{11f})NR^{11f}R^{11f}$, $(CH_2)_rS(O)_pR^{11b}$, $(CH_2)_rS(O)_2NR^{11f}R^{11f}$, $(CH_2)_rNR^{11f}S(O)_2R^{11b}$, and $(CH_2)_r$phenyl substituted with 0–3 R^{11e};

R^{11d}, at each occurrence, is selected from C_{1-6} alkyl substituted with 0–3 R^{11e}, C_{2-6} alkenyl, C_{2-6} alkynyl, and a C_{3-10} carbocyclic residue substituted with 0–3 R^{11c};

R^{11e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{11f}R^{11f}$, and $(CH_2)_r$phenyl;

R^{11f}, at each occurrence, is selected from H, C_{1-5} alkyl, and C_{3-6} cycloalkyl;

R^{12} is selected from H, C_{1-6} alkyl, $(CH_2)_qOH$, $(CH_2)_rC_{3-6}$ cycloalkyl, and $(CH_2)_r$phenyl substituted with 0–3 R^{12a};

R^{12a}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{9f}R^{9f}$, and $(CH_2)_r$phenyl;

R^{13}, at each occurrence, is selected from C_{1-4} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-6} cycloalkyl, $(CF_2)_wCF_3$, $(CH_2)_qNR^{13a}R^{13a\prime}$, $(CH_2)_qOH$, $(CH_2)_qOR^{13b}$, $(CH_2)_qSH$, $(CH_2)_qSR^{13b}$, $(CH_2)_wC(O)OH$, $(CH_2)_wC(O)R^{13b}$, $(CH_2)_wC(O)NR^{13a}R^{13a\prime}$, $(CH_2)_qNR^{13d}C(O)R^{13a}$, $(CH_2)_wC(O)OR^{13b}$, $(CH_2)_qOC(O)R^{13b}$, $(CH_2)_wS(O)_pR^{13b}$, $(CH_2)_wS(O)2NR^{13a}R^{13a\prime}$, $(CH_2)_qNR^{13d}S(O)_2R^{13b}$, and $(CH_2)_w$-phenyl substituted with 0–3 R^{13c};

R^{13a} and $R^{13a\prime}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{3-6} cycloalkyl, and phenyl substituted with 0–3 R^{13c};

R^{13b}, at each occurrence, is selected from C_{1-6} alkyl, C_{3-6} cycloalkyl, and phenyl substituted with 0–3 R^{13c};

R^{13c}, at each occurrence, is selected from C_{1-6} alkyl, C_{3-6} cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, $(CH_2)_qOH$, $(CH_2)_rSC_{1-5}$ alkyl, and $(CH_2)_rNR^{13d}R^{13d\prime}$;

R^{13d}, at each occurrence, is selected from H, C_{1-6} alkyl, and C_{3-6} cycloalkyl;

R^{14} is selected from C_{1-4} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, $C(O)NR^{14a}R^{14a\prime}$, $C(O)R^{14b}$, $C(O)OC_{1-4}$ alkyl, $(CH_2)_rS(O)_pR^{14b}$, $(CH_2)_r$phenyl substituted with 0–3 R^{14c};

R^{14a} and $R^{14a\prime}$, at each occurrence, are selected from H, C_{1-6} alkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, and $(CH_2)_r$phenyl substituted with 0–3 R^{14c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{14c};

R^{14b}, at each occurrence, is selected from C_{1-6} alkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, and $(CH_2)_r$phenyl substituted with 0–3 R^{14c}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{14c}; and

R^{14c}, at each occurrence, is selected from C_{1-6} alkyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, $(CH_2)_w$phenyl;

R^{15}, at each occurrence, is selected from C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, NO_2, CN, $(CHR')_rNR^{15a}R^{15a\prime}$, $(CHR')_rOH$, $(CHR')_rO(CHR')_rR^{15d}$, $(CHR')_rSH$, $(CHR')_rC(O)H$, $(CHR')_rS(CHR')_rR^{15d}$, $(CHR')_rC(O)OH$, $(CHR')_rC(O)(CHR')_rR^{15b}$, $(CHR')_rC(O)NR^{15a}R^{15a\prime}$, $(CHR')_rNR^{15f}C(O)(CHR')_rR^{15b}$,

$(CHR')_rC(O)O(CHR')_rR^{15d}$, $(CHR')_rOC(O)(CHR')_rR^{15b}$, $(CHR')_rC(=NR^{15f})NR^{15a}R^{15a\prime}$, $(CHR')_rNHC(=NR^{15f})NR^{15f}R^{15f}$, $(CHR')_rS(O)_pR^{15b}$, $(CHR')_rS(O)2NR^{15a}R^{15a\prime}$, $(CHR')_rNR^{15f}S(O)_2(CHR')_rR^{15b}$, C_{1-6} haloalkyl, C_{2-8} alkenyl substituted with 0–3 R', C_{2-8} alkynyl substituted with 0–3 R', $(CHR')_r$phenyl substituted with 0–3 R^{15e}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{15e};

R^{15a} and $R^{15a\prime}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–5 R^{15e}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{15e};

R^{15b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_rC_{3-6}$ carbocyclic residue substituted with 0–3 R^{15e}, and $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{15e};

R^{15d}, at each occurrence, is selected from C_{2-8} alkenyl, C_{2-8} alkynyl, C_{1-6} alkyl substituted with 0–3 R^{15e}, a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–3 R^{15e}, and a $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{15e};

R^{15e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_r$ $NR^{15f}R^{15f}$, and $(CH_2)_r$phenyl;

R^{15f}, at each occurrence, is selected from H, C_{1-5} alkyl, C_{3-6} cycloalkyl, and phenyl;

R^{16}, at each occurrence, is selected from C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, NO_2, CN, $(CHR')_rNR^{16a}R^{16a\prime}$, $(CHR')_rOH$, $(CHR')_rO(CHR')_rR^{16d}$, $(CHR')_rSH$, $(CHR')_rC(O)H$, $(CHR')_rS(CHR')_rR^{16d}$, $(CHR')_rC(O)OH$, $(CHR')_rC(O)(CHR')_rR^{16b}$, $(CHR')_rC(O)NR^{16a}R^{16a\prime}$, $(CHR')_rNR^{16f}C(O)(CHR')_rR^{16b}$, $(CHR')_rC(O)O(CHR')_rR^{16d}$, $(CHR')_rOC(O)(CHR')_rR^{16b}$, $(CHR')_rC(=NR^{16f})NR^{16a}R^{16a\prime}$, $(CHR')_rNHC(=NR^{16f})NR^{16f}R^{16f}$, $(CHR')_rS(O)_pR^{16b}$, $(CHR')_rS(O)_2NR^{16a}R^{16a\prime}$, $(CHR')_rNR^{16f}S(O)_2(CHR')_rR^{16b}$, C_{1-6} haloalkyl, C_{2-8} alkenyl substituted with 0–3 R', C_{2-8} alkynyl substituted with 0–3 R', and $(CHR')_r$phenyl substituted with 0–3 R^{16e};

R^{16a} and $R^{16a\prime}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–5 R^{16e}, and a $(CH_2)_r$-5–10 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{16e};

R^{16b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_rC_{3-6}$ carbocyclic residue substituted with 0–3 R^{16e}, and a $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–2 R^{16e};

R^{16d}, at each occurrence, is selected from C_{2-8} alkenyl, C_{2-8} alkynyl, C_{1-6} alkyl substituted with 0–3 R^{16e}, a $(CH_2)_rC_{3-10}$ carbocyclic residue substituted with 0–3 R^{16e}, and a $(CH_2)_r$-5–6 membered heterocyclic system containing 1–4 heteroatoms selected from N, O, and S, substituted with 0–3 R^{16e};

R^{16e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{16f}R^{16f}$, and $(CH_2)_r$phenyl;

R^{16f}, at each occurrence, is selected from H, C_{1-5} alkyl, and C_{3-6} cycloalkyl, and phenyl;

v is selected from 0, 1, and 2;

t is selected from 1 and 2;

w is selected from 0 and 1;

r is selected from 0, 1, 2, 3, 4, and 5;

q is selected from 1, 2, 3, 4, and 5; and

p is selected from 1, 2, and 3.

US 6,331,546 B1

USE OF 2-AMINO-3,4-DIHYDROQUINAZOLINES FOR THE PRODUCTION OF A MEDICAMENT FOR THE TREATMENT OR PROPHYLAXIS OF ILLNESSES CAUSED BY ISCHEMIC CONDITIONS

Andreas Weichert, Egelsbach; Udo Albus, Florstadt, and Hans-Willi Jansen, Niedernhausen, all of Germany, assignors to Aventis Pharma Deutschland GmbH, Frankfurt am Main, Germany

Filed Oct. 26, 2000, Appl. No. 696,233

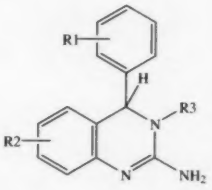
Claims priority, application Germany, Oct. 27, 1999, 199 51 702

Int. Cl. A61K *31/505;* **A61P** *9/10*

U.S. Cl. 514—260 **13 Claims**

1. A method of treating or preventing of an ischemic condition, comprising administering to a host in need thereof an effective amount of a compound of the formula I

I



or of a pharmaceutically tolerable salt thereof, in which:

R1 and R2 are hydrogen, F, Cl, Br, I, straight-chain or branched C_1–C_4-alkyl or C_1–C_4-alkoxy, and

R3 is hydrogen, straight-chain or branched C_1–C_4-alkyl or phenyl,

the phenyl nucleus being unsubstituted or carrying one to three substituents selected from the group consisting of F, Cl, CH_3 and CH_3O.

US 6,331,547 B1

WATER SOLUBLE SDZ RAD ESTERS

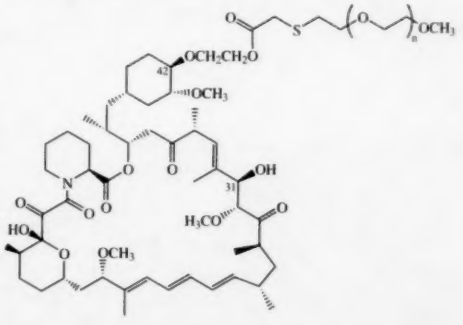
Tianmin Zhu, Monroe, N.Y.; Syed M. Shah, East Hanover, N.J., and Richard W. Saunders, Palisades, N.Y., assignors to American Home Products Corporation, Madison, N.J.

Provisional application No. 60/183,035, filed on Aug. 18, 1999. This application Aug. 16, 2000, Appl. No. 639,610.

Int. Cl. C07D *498/16;498/18;491/06;* **A61K** *31/395;31/445*

U.S. Cl. 514—291 **18 Claims**

1. A compound of the structure



wherein n is an integer from 5–450.

US 6,331,548 B1
1-CYCLOALKYL-1,8-NAPHTHYRIDIN-4-ONE DERIVATIVE AS TYPE IV PHOSPHODIESTERASE INHIBITOR

Tetsuo Shimamoto, Suita; Hidekazu Inoue, and Yasuhiro Hayashi, both of Osaka, all of Japan, assignors to Suntory Limited, Osaka, Japan

PCT No. PCT/JP99/00404, § 371 Date Sep. 29, 1999, § 102(e) Date Sep. 29, 1999, PCT Pub. No. WO99/38867, PCT Pub. Date Aug. 5, 1999

PCT Filed Jan. 29, 1999, Appl. No. 402,142

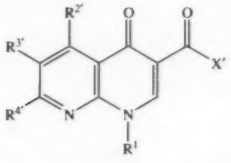
Claims priority, application Japan, Jan. 29, 1998, 10-017009

Int. Cl. A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—300 **35 Claims**

1. A 1-cycloalkyl-1,8-naphthyridin-4-one derivative having the formula (I'):

(I')



wherein R^1 indicates a substituted or unsubstituted cycloalkyl group or a substituted or unsubstituted heterocycloalkyl group,

$R^{2'}$, $R^{3'}$, and $R^{4'}$ independently indicate a hydrogen atom, a substituted or unsubstituted lower alkyl group,

X' indicates a group NR^5R^6, wherein R^5 and R^6 independently indicate a hydrogen atom, a substituted or unsubstituted lower alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heteroaryl group,

provided that R^5 and R^6 do not indicate a substituted or unsubstituted lower alkyl group at the same time,

or a salt or solvate thereof.

US 6,331,549 B1
1-AMINOETHYLQUINOLINE DERIVATIVES FOR TREATING URINARY INCONTINENCE

Christophe Philippo; Patrick Mougenot, both of Rueil-Malmaison; Gérard Defosse, Paris; Alain Braun, Boulogne Billancourt, and Philippe Bovy, Mareil Marly, all of France, assignors to Sanofi-Synthelabo, Paris, France

PCT No. PCT/FR99/02760, § 371 Date May 9, 2001, § 102(e) Date May 9, 2001, PCT Pub. No. WO00/29379, PCT Pub. Date May 25, 2000

PCT Filed Nov. 10, 1999, Appl. No. 831,442

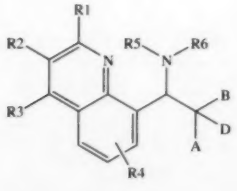
Claims priority, application France, Nov. 17, 1998, 98/14398

Int. Cl. C07D *215/14;* **A61K** *31/47*

U.S. Cl. 514—311 **18 Claims**

1. A compound of formula (I)

(I)



in which:

A represents a hydrogen atom, an azido, a halogen, a hydroxyl, a thiol, an amino, a phenyl, a C_{1-6} akyl, C_{1-6} alkylamino, di(C_{1-6} alkyl)amino, hydroxylamine, C_{1-6} alkylhydroxylamine, N,O—C_{1-6} dialkylhydroxylamine, C_{1-6} alkoxy or C_{1-6} alkylsulphanyl group,

B and D represent, independently of each other, a hydrogen atom, a phenyl, a C_{1-6} alkyl, C_{2-6} alkenyl, C_{1-6} fluoroalkyl or C_{1-2} perfluoroalkyl group, or together form an oxo,

R_1 represents a hydrogen atom, a halogen, a carbonyl, a hydroxycarbonyl, a cyano, a carboxamide, a C_{1-6} alkyl, C_{2-6} alkenyl, C_{3-6} cycloalkyl, C_{1-6} alkoxycarbonyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, (C_{1-6})alkoxy(C_{1-3})alkyl, C_{1-6} fluoroalkyl, C_{1-2} perfluoroalkyl or $CF_3(OH)CH$ group, or R_1 and R_2 together form a C_{3-5} alkylene or C_{3-5} alkenylene chain or form, with the carbon atoms to which they are attached, a phenyl,

R_2, R_3 and R_4 represent, independently of each other, a hydrogen atom, a halogen or a C_{1-6} alkyl group, or R_2 and R_3 together form a C_{3-5} alkylene or C_{3-5} alkenylene chain or R_1 and R_2, together, are as defined above,

R_5 and R_6 represent, independently of each other, a hydrogen atom, a C_{1-6} alkyl, C_{2-6} alkenyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkenyl, C_{1-6} fluoroalkyl or C_{1-2} perfluoroalkyl group or R_5 and R_6 together form a C_{2-6} alkylene or C_{3-6} alkenylene chain, to give, with the nitrogen to which they are attached, a heterocycle, this heterocycle optionally being substituted with a C_{1-4} alkyl group, and salts thereof, with the exception of 8-(1-aminoethyl)quinoline.

US 6,331,550 B1
METHODS OF USE OF QUINOLONE COMPOUNDS AGAINST ANAEROBIC PATHOGENIC BACTERIA

Diane M. Citron, and Ellie J. C. Goldstein, both of Santa Monica, Calif., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Provisional application No. 60/141,458, filed on Jun. 29, 1999. This application Sep. 21, 1999, Appl. No. 400,144.

Int. Cl. A61K *31/47;31/44*

U.S. Cl. 514—312 **16 Claims**

1. A method for modulating metabolism of anaerobic pathogenic bacteria comprising the step of contacting anaerobic pathogenic bacteria with an antibacterially effective amount of a composition comprising a gemifloxacin compound, or antibacterially effective derivatives thereof.

US 6,331,551 B1
METHODS OF TREATING MICROBIAL INFECTION AND THERAPEUTIC FORMULATIONS THEREFOR

Ven Subbiah, R. J. Reynolds Tobacco Company, Avoca Division, P.O. Box 129, Avoca Rd., Merry Hill, N.C. 27957

Division of application No. 09/094,058, filed on Jun. 9, 1998, now Pat. No. 6,150,381. This application Nov. 13, 2000, Appl. No. 711,700.

Int. Cl. A01N *43/40;* **A61K** *31/44;6/00;7/00*

U.S. Cl. 514—340 **41 Claims**

1. A cosmetic formulation for treating a skin disorder caused by a microbial infection, comprising a sclareol-like or a sclareolide-like compound in an amount sufficient to treat said skin disorder, in a cosmetically acceptable carrier.

US 6,331,552 B1

SUBSTITUTED IMIDAZOLIDINE DERIVATIVES, THEIR PREPARATION, THEIR USE AND PHARMACEUTICAL PREPARATIONS INCLUDING THEM

Volkmar Wehner, Sandberg; Hans Ulrich Stilz; Wolfgang Schmidt, both of Frankfurt, and Dirk Seiffge, Mainz-Kostheim, all of Germany, assignors to Aventis Pharma Deutschland GmbH, Frankfurt am Main, Germany

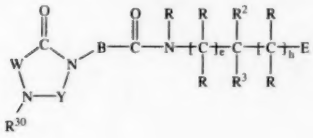
Continuation of application No. 09/195,440, filed on Nov. 18, 1998, now abandoned. This application Mar. 1, 2000, Appl. No. 516,587.

Claims priority, application Germany, Nov. 19, 1997, 197 51 251

Int. Cl. A61K *31/415;31/44;* A61P *29/00;* C07D *233/22;401/06*

U.S. Cl. 514—341 33 Claims

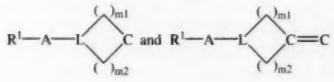
1. A compound of the formula I



(I)

in which

W is a divalent radical selected from the group consisting of R^1-A-C(R^{13}), R^1-A-C(R^{13})=C,



in which the ring systems

can be saturated or mono- or polyunsaturated and can be substituted by 1, 2, or 3 identical or different substituents R^{13} and/or by one or two doubly bonded oxygen atoms and/or sulfur atoms, and in which L is C(R^{13}) and in which m1 and m2 independently of one another are one of the numbers 0, 1, 2, 3, 4, 5 and 6, but the sum m1+m2 is one of the numbers 1, 2, 3, 4, 5, or 6; and in which W has a meaning other than CH_2;

Y is a carbonyl group or methylene group;

A is a direct bond, one of the divalent radicals (C_1–C_6)-alkylene, (C_3–C_7)-cycloalkylene, phenylene, phenylene-(C_1–C_6)-alkyl, phenylene-(C_2–C_6)-alkenyl, or a divalent radical of pyridine which can be monosubstituted or disubstituted by (C_1–C_6)-alkyl, where in the radicals phenylenealkyl and phenylenealkenyl the radical R^1 is bonded to the phenylene group;

B is a divalent radical selected from the group consisting of (C_1–C_6)-alkylene, (C_2–C_6)-alkenylene, phenylene, phenylene-(C_1–C_3)-alkyl, (C_1–C_3)-alkylenephenyl and (C_1–C_3)-alkylenephenyl-(C_1–C_3)-alkyl, where the (C_1–C_6)-alkylene radical and the (C_2–C_6)-alkenylene radical are unsubstituted or substituted by one or more identical or different radicals selected from the group consisting of (C_1–C_8)-alkyl, (C_2–C_8)-alkenyl, (C_2–C_8)-alkynyl, (C_3–C_{10})-cycloalkyl, (C_3–C_{10})-cycloalkyl-(C_1–C_6)-alkyl, optionally substituted (C_6–C_{14})-aryl, (C_6–C_{14})-aryl-(C_1–C_6)-alkyl optionally substituted in the aryl radical, optionally substituted pyridyl or pyridyl-(C_1–C_6)-alkyl optionally substituted in the pyridyl radical;

E is (R^8O)$_2$P(O), $R^{10}OS(O)_2$, $R^9NHS(O)_2$, R^6CO, $R^{10}CO$, HCO, $R^8O—CH_2$, $R^8CO—O—CH_2$, $R^{8a}O—CO—O—CH_2$, or (R^8O)$_2$P(O)—O—CH_2;

R is hydrogen, (C_1–C_8)-alkyl, (C_3–C_{12})-cycloalkyl, (C_3–C_{12})-cycloalkyl-(C_1–C_8)-alkyl, optionally substituted (C_6–C_{14})-aryl, (C_6–C_{14})-aryl-(C_1–C_8)-alkyl optionally substituted in the aryl radical, optionally substituted pyridyl or pyridyl-(C_1–C_8)-alkyl optionally substituted in the pyridyl radical, where all radicals R are independent of one another and the radicals R can be identical or different;

R^1 is hydrogen, (C_1–C_{10})-alkyl which can optionally be mono- or polysubstituted by fluorine, (C_3–C_{12})-cycloalkyl, (C_3–C_{12})-cycloalkyl-(C_1–C_8)-alkyl, R^{21}—((C_6–C_{14})-aryl) optionally substituted in the aryl radical, (R^{21}—((C_6–C_{14})-aryl))-(C_1–C_8)-alkyl optionally substituted in the aryl radical, the radical pyridyl or pyridyl-(C_1–C_8)-alkyl or one of the radicals X—NH—C(=NH)—R^{20}—, X^1—NH—R^{20}—, $R^{21}O—R^{20}$—, $R^{21}N(R^{21})—R^{20}$—, $R^{21}C(O)$—, $R^{21}O—C(O)$—, $R^{22}N(R^{21})—C(O)$—, $R^{22}C(O)—N(R^{21})$—, $R^{21}O—N$=, O= and S=;

X is hydrogen, (C_1–C_6)-alkyl, (C_1–C_6)-alkylcarbonyl, (C_1–C_6)-alkoxycarbonyl, (C_1–C_{10})-alkylcarbonyloxy-(C_1–C_6)-alkoxycarbonyl, optionally substituted (C_6–C_{14})-arylcarbonyl, optionally substituted (C_6–C_{14})-aryloxycarbonyl, (C_6–C_{14})-aryl-(C_1–C_6)-alkoxycarbonyl which can also be substituted in the aryl radical, cyano, hydroxyl, (C_1–C_6)-alkoxy, (C_6–C_{14})-aryl-(C_1–C_6)-alkoxy which can also be substituted in the aryl radical, or amino;

X^1 has one of the meanings of X or is R'—NH—C(=N—R"), in which R' and R" independently of one another have the meanings of X;

R^2 is hydrogen, (C_1–C_8)-alkyl, optionally substituted (C_6–C_{14})-aryl, (C_6–C_{14})-aryl-(C_1–C_8)-alkyl optionally substituted in the aryl radical or (C_3–C_8)-cycloalkyl;

R^3 is hydrogen, (C_1–C_{10})-alkyl which can optionally be mono- or polysubstituted by fluorine, optionally substituted (C_6–C_{14})-aryl, (C_6–C_{14})-aryl-(C_1–C_8)-alkyl optionally substituted in the aryl radical, optionally substituted pyridyl or pyridyl-(C_1–C_8)-alkyl optionally substituted in the pyridyl radical, (C_3–C_8)-cycloalkyl, (C_3–C_8)-cycloalkyl-(C_1–C_8)-alkyl, (C_6–C_{12})-bicycloalkyl, (C_6–C_{12})-bicycloalkyl-(C_1–C_8)-alkyl, (C_6–C_{12})-tricycloalkyl, (C_6–C_{12})-tricycloalkyl-(C_1–C_8)-alkyl, (C_2–C_8)-alkenyl, (C_2–C_8)-alkynyl, $R^{11}NH$, $CON(CH_3)R^4$, $CONHR^4$, $COOR^{21}$, $COOR^{15}$, $CON(CH_3)R^{15}$, or $CONHR^{15}$;

R^4 is hydrogen or (C_1–C_{10})-alkyl which is unsubstituted or is mono- or polysubstituted by identical or different radicals selected from the group consisting of hydroxyl, (C_1–C_8)-alkoxy, R^5, optionally substituted (C_3–C_8)-cycloalkyl, hydroxycarbonyl, aminocarbonyl, mono- or di-((C_1–C_{10})-alkyl)-aminocarbonyl, (C_6–C_{14})-aryl-(C_1–C_8)-alkoxycarbonyl which can also be substituted in the aryl radical, (C_1–C_8)-alkoxycarbonyl, R^6—CO, and trifluoromethyl;

R^5 is optionally substituted (C_6–C_{14})-aryl, (C_6–C_{14})-aryl-(C_1–C_8)-alkyl optionally substituted in the aryl radical, or optionally substituted pyridyl;

R^6 is the radical of a natural amino acid, imino acid, optionally N—(C_1–C_8)-alkylated or N—((C_6–C_{14})-aryl-(C_1–C_8)-alkylated) azaamino acid which can also be substituted in the aryl radical, or the radical of a dipeptide, tripeptide or tetrapeptide, and their esters and amides, in which free functional groups can be protected by protective groups and in which the nitrogen atoms in the amide bonds in the group R^6—CO can carry a radical R as a substituent;

R^8 is hydrogen, (C_1–C_{10})-alkyl, optionally substituted (C_6–C_{14})-aryl or (C_6–C_{14})-aryl-(C_1–C_8)-alkyl which can also be substituted in the aryl radical, where the radicals R^8 are independent of one another and can be identical or different;

R^{8a} independently of R^8 has one of the meanings of R^8 with the exception of hydrogen;

R^9 is hydrogen, aminocarbonyl, (C_1–C_{10})-alkylaminocarbonyl, (C_3–C_8)-cycloalkylaminocarbonyl, optionally substituted (C_6–C_{14})-arylaminocarbonyl, (C_1–C_{10})-alkyl, optionally substituted (C_6–C_{14})-aryl or (C_3–C_8)-cycloalkyl;

R^{10} is hydroxyl, (C_1–C_{10})-alkoxy, (C_6–C_{14})-aryl-(C_1–C_8)-alkoxy which can also be substituted in the aryl radical, optionally substituted (C_6–C_{14})-aryloxy, (C_1–C_8)-alkylcarbonyloxy-(C_1–C_6)-alkoxy, (C_6–C_{14})-arylcarbonyloxy-(C_1–C_6)-alkoxy optionally substituted in the aryl radical, (C_6–C_{14})-aryl-

$(C_1–C_6)$-alkylcarbonyloxy-$(C_1–C_6)$-alkoxy optionally substituted in the aryl radical, $(C_1–C_8)$-alkoxycarbonyloxy-$(C_1–C_6)$-alkoxy, $(C_6–C_{14})$-aryloxycarbonyloxy-$(C_1–C_6)$-alkoxy optionally substituted in the aryl radical, $(C_6–C_{14})$-aryl-$(C_1–C_6)$-alkoxycarbonyloxy $(C_1–C_6)$-alkoxy optionally substituted in the aryl radical, amino, mono- or di-$((C_1–C_{10})$-alkyl)-amino or R^8R^8N—$CO(C_1–C_6)$-alkoxy, in which the radicals R^8 are independent of one another and can be identical or different;

R^{11} is hydrogen, R^{12a}, R^{12a}—CO, H—CO, R^{12a}—O—CO, R^{12b}—CO, R^{12b}—CS, R^{12a}—$S(O)_2$ or R^{12b}—$S(O)_2$;

R^{12a} is $(C_1–C_{10})$-alkyl, $(C_2–C_8)$-alkenyl, $(C_2–C_8)$-alkynyl, $(C_3–C_{12})$-cycloalkyl, $(C_3–C_{12})$-cycloalkyl-$(C_1–C_8)$-alkyl, optionally substituted $(C_6–C_{14})$-aryl, $(C_6–C_{14})$-aryl-$(C_1–C_8)$-alkyl optionally substituted in the aryl radical, optionally substituted pyridyl or pyridyl-$(C_1–C_8)$-alkyl optionally substituted in the pyridyl radical, or the radical R^{15};

R^{12b} is amino, di-$((C_1–C_{10})$-alkyl)-amino or R^{12a}—NH;

R^{13} is hydrogen, $(C_1–C_6)$-alkyl which can optionally be mono- or polysubstituted by fluorine, optionally substituted $(C_6–C_{14})$-aryl, $(C_6–C_{14})$-aryl-$(C_1–C_6)$-alkyl optionally substituted in the aryl radical, $(C_3–C_8)$-cycloalkyl or $(C_3–C_8)$-cycloalkyl-$(C_1–C_6)$-alkyl;

R^{15} is R^{16}—$(C_1–C_6)$-alkyl or R^{16};

R^{16} is a 6-membered to 24-membered, bicyclic or tricyclic radical which is saturated or partially unsaturated and which can also be substituted by one or more identical or different substituents selected from the group consisting of $(C_1–C_4)$-alkyl and oxo;

R^{20} is a direct bond or a divalent $(C_1–C_6)$-alkylene radical;

R^{21} is hydrogen, $(C_1–C_8)$-alkyl, $(C_3–C_{12})$-cycloalkyl, $(C_3–C_{12})$-cycloalkyl-$(C_1–C_8)$-alkyl, optionally substituted $(C_6–C_{14})$-aryl, $(C_6–C_{14})$-aryl-$(C_1–C_8)$-alkyl optionally substituted in the aryl radical, the radical pyridyl or pyridyl-$(C_1–C_8)$-alkyl, in which alkyl radicals can be monosubstituted or polysubstituted by fluorine and the radicals R^{21}, if they occur more than once, are independent of one another and can be identical or different;

R^{22} is R^{21}—, $R^{21}O$—, $R^{21}N(R^{21})$—, $R^{21}C(O)$—, $R^{21}O$—$C(O)$—, $R^{21}N(R^{21})$—$C(O)$—, $R^{21}N(R^{21})$—$C(=N(R^{21}))$— or $R^{21}C(O)$—$N(R^{21})$—;

R^{30} is one of the radicals $R^{32}(R)N$—CO—$N(R)$—R^{31} or $R^{32}(R)N$—CS—$N(R)$—R^{31};

R^{31} is the divalent radical —R^{33}—R^{34}—R^{35}—R^{36}—, where R^{36} is bonded to the nitrogen atom in the imidazolidine ring in the formula I;

R^{32} is hydrogen, $(C_1–C_8)$-alkyl, which can optionally be substituted by 1 to 8 fluorine atoms, $(C_2–C_8)$-alkenyl, $(C_2–C_8)$-alkynyl, $(C_3–C_{12})$-cycloalkyl, $(C_3–C_{12})$-cycloalkyl-$(C_1–C_8)$-alkyl, $(C_6–C_{12})$-bicycloalkyl, $(C_6–C_{12})$-bicycloalkyl-$(C_1–C_8)$-alkyl, $(C_6–C_{12})$-tricycloalkyl, $(C_6–C_{12})$-tricycloalkyl-$(C_1–C_8)$-alkyl, optionally substituted $(C_6–C_{14})$-aryl, $(C_6–C_{14})$-aryl-$(C_1–C_8)$-alkyl optionally substituted in the aryl radical, optionally substituted pyridyl or pyridyl-$(C_1–C_8)$-alkyl optionally substituted in the pyridyl radical;

R^{33} is a direct bond or a divalent $(C_1–C_6)$-alkylene radical;

R^{34} is a divalent radical selected from the group consisting of $(C_1–C_8)$-alkylene, $(C_3–C_{12})$-cycloalkylene, $(C_6–C_{12})$-bicycloalkylene, $(C_6–C_{12})$-tricycloalkylene, optionally substituted $(C_6–C_{14})$-arylene and optionally substituted divalent radical of pyridine;

R^{35} is a direct bond or a divalent $(C_1–C_8)$-alkylene radical;

R^{36} is a direct bond, the group —CO— or the group —$S(O)_n$—;

e and h independently of one another are 0 or 1;

n is 1 or 2;

in any of its stereoisomeric forms or mixtures thereof in any ratios, or a physiologically tolerable salt thereof.

US 6,331,553 B1

AROMATIC AMINE DERIVATIVES HAVING NOS INHIBITING ACTION

Toru Esaki; Toshihiko Makino; Yoshikazu Nishimura, and Toshiaki Nagafuji, all of Shizuoka-ken, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP97/04762, § 371 Date Jun. 24, 1999, § 102(e) Date Jun. 24, 1999, PCT Pub. No. WO98/28257, PCT Pub. Date Jul. 2, 1998

PCT Filed Dec. 24, 1997, Appl. No. 331,733

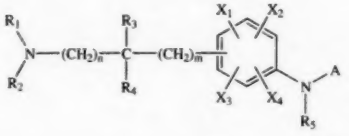
Claims priority, application Japan, Dec. 24, 1996, 8-359791

Int. Cl. C07D *213/02;* **A61K** *31/44*

U.S. Cl. 514—352 **43 Claims**

1. A compound represented by formula (1), or a tautomer, stereoisomer or optically active form of the compound or a pharmaceutically acceptable salt thereof

(1)



where R_1 and R_2, which may be the same or different, are each a hydrogen atom, an optionally substituted lower alkyl group, an acyl group or a lower alkoxycarbonyl group, or R_1 and R_2 may combine together to form a 3- to 8-membered ring;

R_3 and R_4, which may be the same or different, are each a hydrogen atom, an optionally substituted lower alkyl group, or R_3 and R_4 may combine together to form a monocyclic or fused ring having 3–10 carbon atoms;

R_5 is a hydrogen atom, a lower alkyl group, an acyl group or a lower alkoxycarbonyl group;

X_1, X_2, X_3, and X_4 which may be the same or different are each a hydrogen atom, a halogen atom, a nitro group, a cyano group, a hydroxyl, group, an optionally substituted lower alkyl group, a lower alkenyl group, a lower alkynyl group, an optionally substituted lower alkoxy group, an optionally substituted lower alkylthio group, a phenyl group optionally substituted by a halogen atom and/or a lower alkyl group, NX_5X_6 or $C(=O)X_7$;

where X_5 and X_6, which may be the same or different, are each a hydrogen atom, an optionally substituted lower alkyl group, an acyl group, an optionally substituted lower alkoxycarbonyl group, or X_5 and X_6 may combine together to form a 3- to 8-membered ring;

X_7 is a hydrogen atom, a hydroxyl group, an optionally substituted lower alkyl group, an optionally substituted lower alkoxy group, or NX_8X_9;

where X_8 and X_9, which may be the same or different, are each a hydrogen atom, an optionally substituted lower alkyl group, or X_8 and X_9 may combine together to form a 3- to 8-membered ring;

A is a substituted benzene ring or a 5- or 6 -membered aromatic hetero ring which is optionally substituted and which contains at least one nitrogen atom as a hetero atom;

n and m are each an integer of 0 or 1, with the proviso that when A is a substituted benzene ring the substituent(s) of which is (are) a nitro group, an amino group or a carboxyl group, either of R_1 or R_2 is a hydrogen atom, and that when A is a substituted benzene, the substituent is not a di-(3-chloroethyl)amino group, and that when A is a pyridine ring substituted by a nitro group, none of X_1, X_2, X_3 and X_4 are a hydroxyl group.

US 6,331,554 B1

ANTIPICORNAVIRAL COMPOUNDS, COMPOSITIONS CONTAINING THEM, AND METHODS FOR THEIR USE

Peter S. Dragovich, Encinitas; Thomas J. Prins, Cardiff, and Ru Zhou, Carlsbad, all of Calif., assignors to Agouron Pharmaceuticals, Inc.

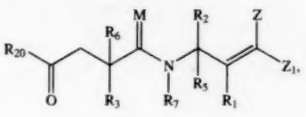
Division of application No. 08/991,282, filed on Dec. 16, 1997, now Pat. No. 6,020,371, which is a continuation-in-part of application No. 08/825,331, filed on Mar. 28, 1997, now abandoned. This application Oct. 20, 1999, Appl. No. 421,560.

Int. Cl. A61K *31/215*; C07C *299/02*

U.S. Cl. 514—357 34 Claims

1. A compound of the formula (I):

(I)

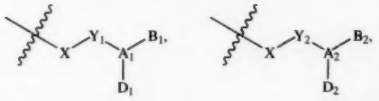


wherein:

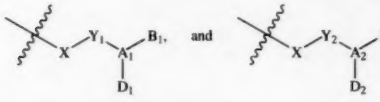
M is O or S;

R_1 is H, F, an alkyl group, OH, SH, or an O-alkyl group;

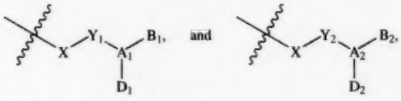
R_2 and R_5, are independently selected from H,



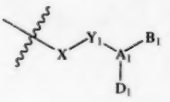
or an alkyl group, wherein the alkyl group is different from



with the proviso that at least one of R_2 or R_5 must be



and wherein, when R_2 or R_5 is



X is =CH or =CF and Y_1 is =CH or =CF,

or X and Y_1, together with Q' form a three-membered ring in which Q' is —$C(R_{10})(R_{11})$— or —O—, X is —CH— or —CF—, and Y_1 is —CH—, —CF—, or —C(alkyl)—, where R_{10} and R_{11} independently are H, a halogen, or an alkyl group, or, together with the carbon atom to which they are attached, form a cycloalkyl group or a heterocycloalkyl group,

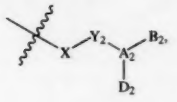
or X is —CH_2 —, —CF_2—, —CHF—, or —S—, and Y_1 is —O—, —S—, —NR_{12}—, —$C(R_{13})$ (R_{14}) —, —C(O)—, —C(S)—, or —$C(CR_{13}R_{14})$—, wherein R_{12} is H or alkyl, and R_{13} and R_{14} independently are H, F, or an alkyl group, or, together with the atoms to which they are bonded, form a cycloalkyl group or a heterocycloalkyl group;

A_1 is C, CH, CF, S, P, Se, N, NR_{15}, S(O), Se(O), P—OR_{15}, or P—$NR_{15}R_{16}$, wherein R_{15} and R_{16} independently are an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, or a heteroaryl group, or, together with the atom to which they are bonded, form a heterocycloalkyl group;

D_1 is a moiety with a lone pair of electrons capable of forming a hydrogen bond; and B_1 is H, F, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, —OR_{17}, —SR_{17}, —$NR_{17}R_{18}$, —$NR_{19}NR_{17}R_{18}$, or —$NR_{17}OR_{18}$, wherein R_{17}, and R_{18}, and R_{19} independently are H, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, or an acyl group;

and with the provisos that when D_1 is the moiety ≡N with a lone pair of electrons capable of forming a hydrogen bond, B_1 does not exist; and when A_1 is an sp^3 carbon, B_1 is not —$NR_{17}R_{18}$ when D_1 is the moiety —$NR_{25}R_{26}$ with a lone pair of electrons capable of forming a hydrogen bond, wherein R_{25} and R_{26} are independently H, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, or a heteroaryl group; and wherein D_1—A_1—B_1, optionally forms a nitro group where A_1 is N;

and further wherein, when R_2 or R_5 is



X is =CH or =CF and Y_2 is =C, =CH, or =CF,

or X and Y_2 together with Q' form a three-membered ring in which Q' is —$C(R_{10})(R_{11})$— or —O—, X is —CH— or —CF—, and Y_2 is —CH—, —CF—, or —C(alkyl)—, where R_{10} and R_{11} independently are H, a halogen, or an alkyl group, or, together with the carbon atom to which they are attached, form a cycloalkyl group or a heterocycloalkyl group,

or X is —CH_2—, —CF_2—, —CHF—, or —S—, and Y_2 is —O—, —S—, —$N(R'_{12})$, —C(O)—, —$C(R_{13})(R_{14})$—, —C(S)—, or —$C(CR_{13}R_{14})$—, wherein R'_{12} is H, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, —OR'_{13}, —NW'_{13} R'_{14} —C(O)—R'_{13}, —SO_2R_{13}' or —C(S)R'_{13}, and R'_{13} and R'_{14} independently are H, F, or an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, or a heteroaryl group, or, together with the atom to which they are attached, form a cycloalkyl group or a heterocycloalkyl group;

A_2 is C, CH, CF, S, P, Se, N, NR_{15} S(O), Se(O), P—OR_{15}, or P—$NR_{15}R_{16}$, wherein R_{15} and R_{16} independently are an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, or a heteroaryl group, or, together with the atom to which they are bonded, form a heterocycloalkyl group;

D_2 is a moiety with a lone pair of electrons capable of forming a hydrogen bond; and

B_2 is H, F, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, —OR_{17}, —SR_{17}, $NR_{17}R_{18}$, —$NR_{19}NR_{17}R_{18}$, or —$NR_{17}OR_{18}$, wherein R_{17}, R_{18}, and R_{19} independently are H, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, or an acyl group;

with the proviso that when D_2 is the moiety ≡N with a lone pair of electrons capable of forming a hydrogen bond, B_2 does not exist, and further wherein any combination of Y_2, A_2, B_2, and D_2 optionally can form a cycloalkyl group, a heterocycloalkyl group, an aryl group, or a heteroaryl group;

R_3 and R_6 are independently H, F, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, —C(O)R_{17}, —OR_{17}, —SR_{17}, —$NR_{17}R_{18}$, —$NR_{19}NR_{17}R_{18}$, or —$NR_{17}OR_{18}$, wherein R_{17}, R_{18}, and R_{19} independently are H, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, or an acyl group;

or, R_3 and R_6, together with the carbon atom to which they are attached, form a cycloalkyl group or a heterocycloalkyl group;

R_7 is H, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, —OR_{17}, —SR_{17}, —NR_{17}, R_{18}, —$NR_{19}NR_{17}R_{18}$, or —$NR_{17}OR_{18}$, wherein R_{17}, R_{18} and R_{19} independently are H, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, or an acyl group;

or R_7, together with R_3 or R_6 and the atoms to which they are attached, forms a heterocycloalkyl group;

R_{20} is H, OH, or any suitable organic moiety; and

Z is H, F, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, —$C(O)R_{21}$, —CO_2R_{21}, —CN, —$C(O)NR_{21}R_{22}$, —$C(O)NR_{21}OR_{22}$, —$C(S)R_{21}$, —$C(S)NR_{21}R_{22}$, —NO_2, —SOR_{21}, —SO_2R_{21}, —$SO_2NR_{21}R_{22}$, —$SO(NR_{21})(OR_{22})$ —$SONR_{21}$, —SO_3R_{21}, —$PO(OR_{21})_2$, —$PO(R_{21})(R_{22})$, —$PO(NR_{21}R_{22})(OR_{23})$, $PO(NR_{21}R_{22})(NR_{23}R_{24})$, —$C(O)NR_{21}NR_{22}R_{23}$, or —$C(S)NR_{21}NR_{22}R_{23}$ and

Z_1 is H, F, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, —$C(O)R_{21}$, —CN, —$C(O)NR_{21}R_{22}$, —$C(O)NR_{21}OR_{22}$, —$C(S)R_{21}$, —$C(S)NR_{21}R_{22}$, —NO_2, —SOR_{21}, —SO_2R_{21}, —$SO_2NR_{21}R_{22}$, —$SO(NR_{21})(OR_{22})$, —$SONR_{21}$, —SO_3R_{21}, —$PO(OR_{21})_2$, —$PO(R_{21})(R_{22})$, —$PO(NR_{21}R_{22})(OR_{23})$, $PO(NR_{21}R_{22})(NR_{23}R_{24})$, —$C(O)NR_{21}NR_{22}R_{23}$, or —$C(S)NR_{21}NR_{22}R_{23}$, wherein R_{21}, R_{22}, R_{23}, and R_{24} are independently H, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, an acyl group, or a thioacyl group, or wherein any two of R_{21}, R_{22}, R_{23}, and R_{24} together with the atom(s) to which they are bonded, form a heterocycloalkyl group;

or Z_1 as defined above, together with R_1, as defined above, and the atoms to which Z_1 and R_1 are bonded, form a cycloalkyl or heterocycloalkyl group,

or Z and Z_1 both as defined above, together with the atoms to which they are bonded, form a cycloalkyl or heterocycloalkyl group;

or a pharmaceutically acceptable prodrug, salt, active metabolite, or solvate thereof; and wherein said compound, or pharmaceutically acceptable prodrug, salt, active metabolite, or solvate thereof, has antipicornaviral activity with an EC_{50} less than or equal to 10 μM in the HI-HeLa cell culture assay.

US 6,331,555 B1

TREATMENT OF PLATELET DERIVED GROWTH FACTOR RELATED DISORDERS SUCH AS CANCERS

Klaus P. Hirth, San Francisco; Elaina Mann, Alameda; Laura K. Shawyer, San Francisco, all of Calif.; Axel Ullrich, Munchen, Germany; Istvan Szekely, Dunakeszi, Hungary; Tamas Bajor, Budapest, Hungary; Janis Haimichael, Budapest, Hungary; Laszlo Orfi, Budapest, Hungary; Alex Levitzki; Aviv Gazit, both of Jerusalem, Israel; Peng Cho Tang, Moraga, Calif., and Reiner Lammers, Munchen, Germany, assignors to University of California, Oakland, Calif.; Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel; Biosignal LTD, Budapest, Hungary; Sugen, Inc., Redwood City, Calif., and Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V., Munich, Germany

Continuation of application No. 08/456,957, filed on Jun. 1, 1995, now abandoned. This application Jul. 27, 1999, Appl. No. 363,237.

Int. Cl. A61K *31/42;31/135;31/13;31/415;31/12*

U.S. Cl. 514—378 **15 Claims**

1. A method of evaluating the susceptibility of a cancer to growth inhibition by a compound comprising the steps of:

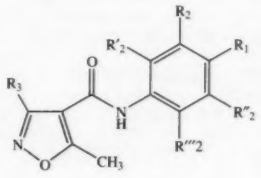
(a) culturing cells of said cancer in medium containing PDGF;

(b) culturing cells of said cancer in medium containing PDGF and said compound; and

(c) measuring and comparing the growth of said cells in (a) and (b), wherein said compound is selected from the group consisting of:

i) a compound of Formula I:

(Formula I)



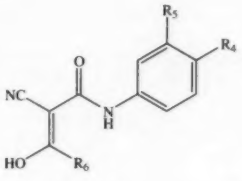
wherein

R_1, R_2, R'_2, R''_2, and R'''_2 are independently selected from the group consisting of hydrogen, halogen, trihalomethyl, and NO_2; and

R_3 is selected from the group consisting of hydrogen, carboxy, alkoxy, and carbalkoxy;

ii) a compound of Formula II:

(Formula II)



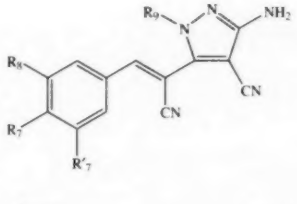
wherein

R_4 and R_5 are independently selected from the group consisting of halogen, hydrogen, trihalomethyl, and NO_2; and

R_6 is selected from the group consisting of aryl, alkyl, alkenyl and alkynyl;

iii) a compound of Formula III:

(Formula III)



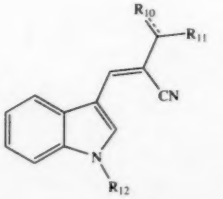
wherein

R_7, R'_7, and R_8 are independently selected from the group consisting of halogen, OH, hydrogen, alkoxy, SH, NH_2, and $C(CH_3)_3$; and

R_9 is aryl or hydrogen;

iv) a compound of Formula IV:

(Formula IV)



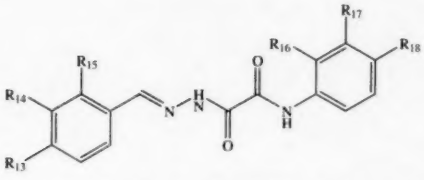
wherein

R_{10} is selected from the group consisting of =S, =O, SH, OH, and NH_2; R_{11} is selected from the group consisting of SH, OH, NH_2, $=C(CN)_2$ and aryl; or R_{10} and R_{11} taken together are aryl; and

R_{12} is selected from the group consisting of hydrogen, aryl, alkyl, alkenyl, and alkynyl;

v) a compound of Formula V:

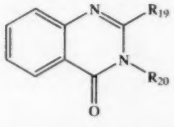
(Formula V)



wherein R_{13}, R_{14}, R_{15}, R_{16}, R_{17}, and R_{18} are independently selected from the group consisting of hydrogen, halogen, alkoxy, OH, amino, alkylamino, and SH;

vi) a compound of Formula VI:

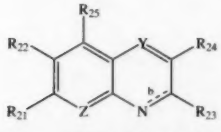
(Formula VI)



wherein R_{19} is selected from the group consisting of aryl, alkyl, alkenyl and alkynyl; and R_{20} is alkyl; or R_{19} and R_{20} are together aryl;

vii) a compound of Formula VII:

(Formula VII)



wherein b is an optional pi bond; Y and Z are independently carbon or nitrogen;

R_{21} and R_{22} are independently selected from the group consisting of hydrogen, halogen, OH, SH, NH_2, NO_2, alkyl, alkenyl, alkynyl, alkoxy, benzoyl, COOH, and carbalkoxy; or R_{21} and R_{22} are together aryl;

R_{23} is selected from the group consisting of hydrogen, halogen, =O, OH, SH, NH_2, alkoxy, COOH, and aryl;

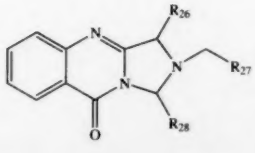
R_{24} is H or aryl; and

R_{25} is selected from the group consisting of hydrogen, halogen, =S, or =O, wherein if R_{25} is =O or =S then b is present as a bond;

provided that if b is not a bond, the adjacent nitrogen optionally has a substituent selected from the group consisting of hydrogen, alkyl, alkyleneamino, alkyleneaminoalkly, and alkylenecyano;

viii) a compound of Formula VIII:

(Formula VIII)



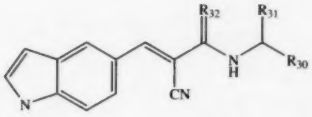
wherein

R_{26} and R_{28} are independently selected from the group consisting of alkyl, aryl, alkenyl, and alkynyl; and

R_{27} is aryl;

ix) a compound of Formula IX:

(Formula IX)



wherein

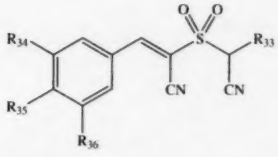
R_{30} is selected from the group consisting of alkyl, alkenyl, and

R_{31} is aryl; and

R_{32} is either O or S;

x) a compound of Formula X:

(Formula X)



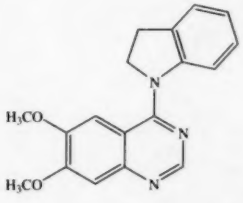
wherein

R_{33} is alkyl or aryl;

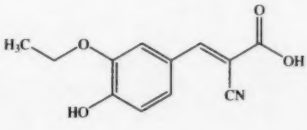
R_{34}, R_{35}, and R_{36} are independently selected from the group consisting of halogen, OH, hydrogen, alkoxy, SH, NH_2, and $C(CH_3)_3$; and

xi) a compound of any one Formula XI(a)–Formula XI(o):

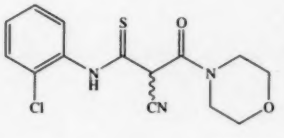
(Formula XI(a))



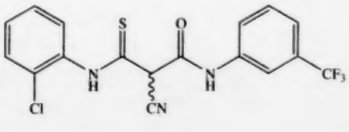
(Formula XI(b))



(Formula XI(c))



(Formula XI(d))



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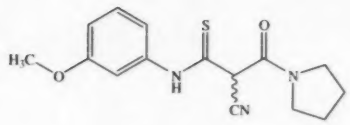
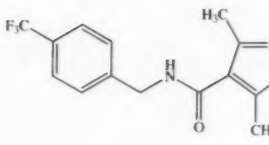
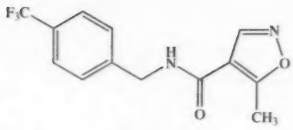
(Formula XI(e))



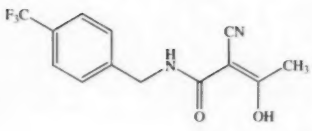
(Formula XI(f))



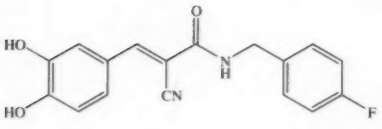
(Formula XI(g))



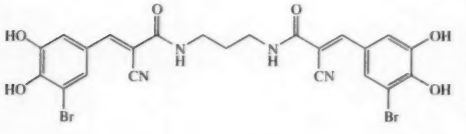
(Formula XI(h))



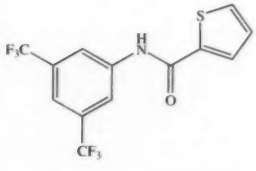
(Formula XI(i))



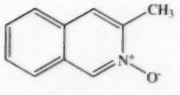
(Formula XI(j))



(Formula XI(k))



(Formula XI(l))



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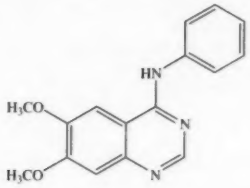
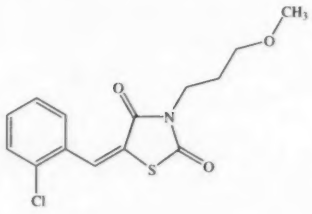
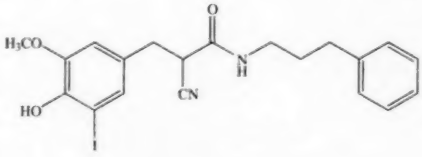
(Formula XI(m))



(Formula XI(n))



(Formula XI(o))



or a pharmaceutically acceptable salt of said compound.

US 6,331,556 B2

HETEROCYCLIC COMPOUNDS AND THEIR THERAPEUTIC USE

Hazel Joan Dyke; Christopher Lowe, and John Gary Montana, all of Cambridge, United Kingdom, assignors to Darwin Discovery, Ltd., United Kingdom

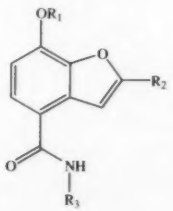
Filed Feb. 9, 2001, Appl. No. 780,657

Claims priority, application United Kingdom, Feb. 11, 2000, 0003257

Int. Cl. A61K *31/422;* **C07D** *413/02;* **A61P** *11/06*

U.S. Cl. 514—378 **16 Claims**

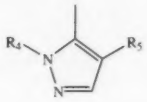
1. A compound of the formula

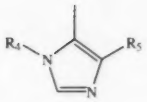


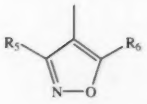
wherein R_1 is C_{1-3} alkyl optionally substituted with one or more fluorines;

R_2 is CH_2OCH_3 or 2 or 3-tetrahydrofuranyl;

R_3 is a pyrazole, imidazole or isoxazole group of partial formula (A), (B) or (C)







R_4 is C_{1-3} alkyl; and

R_5 and R_6, which may be the same or different, each represents C_{1-3} alkyl, halogen, CF_3 or CN;

or a pharmaceutically-acceptable salt thereof.

US 6,331,557 B1

USE OF DIVALENT CATIONS FOR INHIBITING ERYTHROCYTE DEHYDRATION IN VIVO

Carlo Brugnara, Newton Highlands, Mass.; Yves Beuzard, Paris; Frederick Galacteros, Cretgil, both of France, and Lucia De Francheschi, Verona, Italy, assignors to Children's Medical Center Corporation, Boston, Mass.; Insitut National de la Sante et de la Reicherche Medicale (Inserm), Cedex, and Establissement Public Assistance Publique Hopitaux de Paris, Paris, both of France

Provisional application No. 60/064,896, filed on Nov. 7, 1997. This application Nov. 9, 2000, Appl. No. 530,710.

Int. Cl. A61K *31/40*

U.S. Cl. 514—423 **52 Claims**

1. A pharmaceutical composition, comprising:

a pharmaceutically acceptable agent that blocks K—Cl cotransport in an erythrocyte of a subject,

an anti-hemoglobinopathic agent other than said agent that blocks K—Cl cotransport in an erythrocyte of a subject, and

a pharmaceutically acceptable carrier.

US 6,331,558 B1

Patent Not Issued For This Number

US 6,331,559 B1

LIPOIC ACID DERIVATIVES AND THEIR USE IN TREATMENT OF DISEASE

Paul M. Bingham, and Zuzana Zachar, both of Centereach, N.Y., assignors to The Research Foundation of State University of New York at Stony Brook, Stony Brook, N.Y.

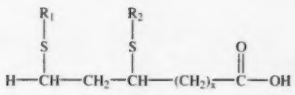
Provisional application No. 60/105,628, filed on Oct. 26, 1998. This application Oct. 26, 1999, Appl. No. 427,477.

Int. Cl. A61K *31/385;31/185;* **C07D** *339/02*

U.S. Cl. 514—440 **27 Claims**

1. A composition comprising the formula:

(A)



wherein:

(B) x is 0–16

R_1 and R_2 are independently acyl $R_3C(O)$—;

wherein R_3 is an alkyl or aryl group; alkyl C_nH_{2n+1}; alkenyl C_mH_{2m-1}; alkynyl C_mH_{2m-3}; aryl, alkyl sulfide $CH_3(CH_2)_n$—S—; imidoyl $CH_3(CH_2)_nC(=NH)$—; and semiacetal $R_4CH(OH)$—S—;

(C) wherein R_4 is CCl_3 or COOH; and wherein n is 0–10 and m is 2–10.

US 6,331,560 B1

TUMOR NECROSIS FACTOR ALPHA (TNF-α) INHIBITING PHARMACEUTICALS

Esther Shohami; Ruth Gallily, and Raphael Mechoulam, all of Jerusalem, Israel, assignors to Yissum Research Development Co. of the Hebrew University of Jerusalem, Jerusalem, Israel

Continuation of application No. 08/952,660, filed on Nov. 17, 1997, now Pat. No. 5,932,610. This application May 26, 1999, Appl. No. 318,774.

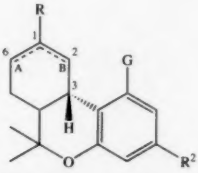
This patent is subject to a terminal disclaimer.

Int. Cl. A61K *31/35*

U.S. Cl. 514—454 **13 Claims**

1. A method for septic shock syndrome prophylaxis by preventing production of tumor necrosis factor by administering to a patient in need thereof a pharmaceutical composition comprising a therapeutically effective amount of a compound of the formula (I):

(I)



having the (3S,4S) configuration and being essentially free of the (3R,4R) enantiomer, wherein

A - - - - - B indicates an optional 1(2) or 6(1) double bond,

R is

(a) —Q wherein Q is a heterocyclic moiety having a labile hydrogen atom so that said moiety acts as a carboxylic acid analogue,

(b) —R'X wherein R' is C_1–C_5 alkyl and X is halogen, —OR" wherein R" is hydrogen, C_1–C_5 alkyl, or —OC(O)R'" wherein R'" is hydrogen or C_1–C_5 alkyl,

(c) —R'N(R")$_2$ wherein R' is C_1–C_5 alkyl and each R", which may be the same or different, is hydrogen or C_1–C_5 alkyl optionally containing a terminal —OR'" or —OC(O)R'" moiety wherein R'" is hydrogen or

(d) —R' wherein R' is C_1–C_5 alkyl,

(e) —R'OR'" wherein R' is C_1–C_5 alkyl and R'" is hydrogen or C_1–C_5 alkyl, or,

(f) —R'—C(O)—OR'", wherein R' may be absent and R' and R'" are as defined above;

G is

(a) halogen,

(b) C_1–C_5 alkyl, or

(c) —OR_1 wherein R_1 is

(a') —R", wherein R" is hydrogen or C_1–C_5 alkyl optionally containing a terminal —OR'" or —OC(O)R'" moiety wherein R'" is hydrogen or C_1–C_5 alkyl, or

(b') —C(O)R'" wherein R'" is as previously defined; and

R_2 is

(a) C_1–C_{12} alkyl,

(b) —OR"", in which R"" is a straight chain or branched C_2–C_9 alkyl which may be substituted at the terminal carbon atom by a phenyl group, or

(c) —$(CH_2)_n$OR'" wherein n is an integer of 1 to 7 and R'" is hydrogen or C_1–C_5 alkyl.

US 6,331,561 B2

USE OF SUBSTITUTED AMINO-METHYL-CHROMANS FOR THE PREVENTION OF NEURONAL DEGENERATION AND FOR THE PROMOTION OF NEURONAL REGENERATION

Thomas Fahrig, Gladbach; Irene Gerlach, Köln; Ervin Horváth, Leverkusen, and Reinhard Jork, Haan, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application No. 09/554,971, filed on May 23, 2000. This application Mar. 9, 2001, Appl. No. 803,621.

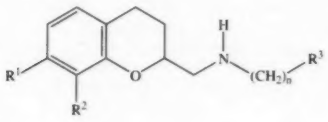
Claims priority, application Germany, Nov. 24, 1997, 197 51 949

Int. Cl. A61K *31/35*

U.S. Cl. 514—456 **8 Claims**

1. A method of inhibiting the expression of GFAP in a mammal, comprising

administering an effective amount of a substituted aminomethyl-chroman of the following formula (I)

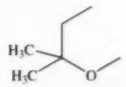


wherein,

R^1 represents hydrogen,

R^2 represents hydrogen, hydroxyl or a radical of the formula —OCH_3, —OCH_2CH_3, —$OCH(CH_3)_2$ or —$OCH_2C(CH_3)_2$—Cl, or

R^1 and R^2 together form a radical of the formula



R^3 represents cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl or

o-benzenesulphimidyl and

n is selected from 1, 2, 3, 4 or 5,

and their optical isomers and pharmaceutically acceptable salts.

US 6,331,562 B1

COMPOUNDS AND METHODS FOR MODULATION OF ESTROGEN RECEPTORS

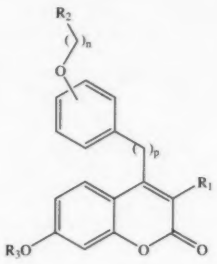
Shripad S. Bhagwat; Jeffrey A. McKie, and Sak Khammungkhune, all of San Diego, Calif., assignors to Signal Pharmaceuticals, Inc., San Diego, Calif.

Continuation of application No. 09/492,939, filed as application No. PCT/US99/31290, filed on Dec. 30, 1999, and a continuation-in-part of application No. 09/475,776, filed on Dec. 30, 1999, now abandoned, Provisional application No. 60/114,472, filed on Dec. 30, 1998. This application Jul. 6, 2000, Appl. No. 611,156.

Int. Cl. A61K *31/37*; **A61P** *35/00*; **C07D** *311/12*

U.S. Cl. 514—457 **63 Claims**

1. A compound having the structure:



or a stereoisomer, prodrug or pharmaceutically acceptable salt thereof,

wherein:

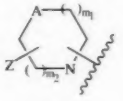
n is 0, 1, 2, 3 or 4;

p is 0;

R_1 is an unsubstituted or substituted C_{6-12}aryl, C_{7-12}arylalky, C_{3-12}heterocycle or C_{4-16}heterocyclealkyl;

R_2 is NR_aR_b wherein R_a and R_b are independently hydrogen, C_{1-8}alkyl, C_{6-12}aryl, or heterocycle, and wherein R_a and R_b are optionally substituted with up to three substituents independently selected from C_{1-6}allyl, halogen, C_{1-6}alkoxy, hydroxy and carboxyl;

or R_2 is a heterocyclic ring of the following structure:



wherein

m_1 and m_2 are independently 0, 1 or 2, and both m_1 and m_2 are not 0,

A is CH_2, O, S or NH,

Z represents 0, 1, 2 or 3 heterocyclic ring substituents selected from halogen, C_{1-8}alkyl, C_{6-12}aryl, C_{7-12}arylalky, C_{3-12}heterocycle, or C_{4-6}heterocyclealkyl,

and wherein any hydrogen atom on the heterocyclic ring may, taken together with a hydrogen atom on an adjacent atom of the heterocyclic ring, form a double bond;

R_3 is hydrogenate, $C(=O)R_4$, $C(=O)OR_4$, $CONHR_4$, $CONR_4R_5$, or $SO_2NR_5R_5$;

R_4 and R_5 are independently C_{1-8}alkyl, C_{6-12}aryl, C_{7-12}aralkyl, or a five- or six-membered heterocycle containing up to two heteroatoms selected from O, NR_6 and $S(O)_q$, wherein each of the above groups are optionally substituted with one to three substituents independently selected from R_7 and q is 0, 1 or 2;

R_6 is hydrogen or C_{1-4} alkyl; and

R_7 is hydrogen, halogen, hydroxy, C_{1-6}alkyl, C_{1-4}alkoxy, C_{1-4}acyloxy, C_{1-4}thio, C_{1-4}alkylsulfinyl, C_{1-4}alkylsulfonyl, (hydroxy)C_{1-4}alkyl, C_{6-12}aryl, C_{7-12}aralkyl, COOH, CN, $CONHOR_8$, SO_2NHR_8, NH_2, C_{1-4}alkylamino, C_{1-4}dialkylamino, $NHSO_2R_8$, NO_2, or a five- or six-membered heterocycle, where each occurrence of R_8 is independently C_{1-6}alkyl.

US 6,331,563 B1

N-HYDROXY-2-(ALKYL, ARYL, OR HETEROARYL, SULFANYL, SULFINYL OR SULFONYL)-3-SUBSTITUTED ALKYL, ARYL OR HETEROARYLAMIDES AS MATRIX METALLOPROTEINASE INHIBITORS

Aranapakam Mudumbai Venkatesan, 97-07 63rd Rd., #9K, Rego Park, N.Y. 11374; George Theodore Grosu, 117 Prospect Pl., Pearl River, N.Y. 10965, and Jannie Lea Baker, 127 Rockinchair Rd., White Plains, N.Y. 10607

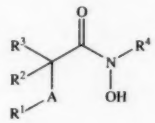
Division of application No. 09/140,504, filed on Aug. 26, 1998, now Pat. No. 6,197,791, which is a continuation-in-part of application No. 09/026,372, filed on Feb. 19, 1998, now abandoned, Provisional application No. 60/038,899, filed on Feb. 27, 1997. This application Jun. 5, 2000, Appl. No. 587,560.

Int. Cl. A61K *31/351;* **C07D** *309/08*

U.S. Cl. 514—459 **9 Claims**

1. A compound according to formula I

I



wherein:

R^1 is alkyl of 1 to 18 carbon atoms, optionally substituted with one or two groups selected independently from R^5;

alkenyl of 3 to 18 carbon atoms having 1 to 3 double bonds, optionally substituted with one or two groups selected independently from R^5;

alkynyl of 3 to 18 carbon atoms having I to 3 triple bonds, optionally substituted with one or two groups selected independently from R^5;

aryl of 6 to 10 carbon atoms, optionally substituted with one or two groups selected independently from R^5;

cycloalkyl of 3 to 8 carbon atoms, optionally substituted with one or two groups selected independently from R^5;

saturated or unsaturated 5 to 10 membered mono or bicyclic heterocycle containing one heteroatom selected from O, S or NR^7, optionally substituted with one or two groups selected independently from R^5;

or heteroaryl-$(CH_2)_{0\text{-}6}$— wherein the heteroaryl group is 5 to 6 membered with one or two heteroatoms selected independently from O, S, and N and may be optionally substituted with one or two groups selected independently from R^5;

A is —S—, —SO— or SO_2—;

R^2 and R^3, taken with the carbon atom to which they are attached, form a 5 to 7 membered heterocyclic ring containing O optionally having one or two double bonds;

R^4 is hydrogen,

alkyl of 1 to 6 carbon atoms, optionally substituted with one or two groups selected independently from R^5;

alkenyl of 3 to 18 carbon atoms having 1 to 3 double bonds, optionally substituted with one or two groups selected independently from R^5;

alkynyl of 3 to 18 carbon atoms having 1 to 3 triple bonds, optionally substituted with one or two groups selected independently from R^5;

phenyl or naphthyl optionally substituted with one or two groups selected independently from R^5;

C_3 to C_8 cycloalkyl or bicycloalkyl optionally substituted with one or two groups selected independently from R^5;

saturated or unsaturated 5 to 10 membered mono or bicyclic heterocycle containing one heteroatom selected from O, S or NR^7, optionally substituted with one or two groups selected independently from R^5;

R^5 is H, C_7–C_{11} aroyl, C_2–C_6 alkanoyl, C_1 to C_{12} alkyl, C_2 to C_{12}alkenyl, C_2–C_{12} alkynyl, F, Cl, Br, I, CN, CHO, C_1–C_6 alkoxy, aryloxy, heteroaryloxy, C_3–C_6 alkenyloxy, C_3–C_6 alkynyloxy, C_1–C_6 alkoxyaryl, C_1–C_6 alkoxyheteroaryl, C_1–C_6 alkylamino-C_1–C_6 alkoxy, C_1–C_2 alkylene dioxy, aryloxy-C_1–C_6 alkyl amine, C_{1-12} perfluoro alkyl, $S(O)_n$—C_1–C_6 alkyl, $S(O)_n$-aryl where n is 0, 1 or 2; OCOO C_1–C_6 alkyl, OCOOaryl, $OCONR^6$, COOH, COO C_1–C_6 alkyl, COOaryl, $CONR^6R^6$, CONHOH, NR^6R^6, $SO_2NR^6R^6$, NR^6SO_2aryl, —$NR^6CONR^6R^6$, $NHSO_2CF_3$, SO_2NHheteroaryl,SO_2NHCOaryl, $CONHSO_2$—C_1–C_6 alkyl, $CONHSO_2$aryl, SO_2NHCOaryl, $CONHSO_2$—C_1–C_6 alkyl, $CONHSO_2$aryl, NH_2, OH, aryl, heteroaryl, C_3 to C_8 cycloalkyl; or saturated or unsaturated 5 to 10 membered mono or bicyclic heterocycle containing one heteroatom selected from O, S or NR^7, wherein C_1–C_6 alkyl is straight or branched, heteroaryl is a 5–10 membered mono or bicyclic heteroaryl group having 1 to 3 heteroatoms selected independently from O, S or NR^7 and aryl is phenyl or naphthyl, optionally substituted by 1 or 2 groups selected from halogen, cyano, amino, nitro, C_1–C_6 alkyl, C_1–C_6 alkoxy, or hydroxy;

R^6 is H, C_1 to C_{18} alkyl optionally substituted with OH; C_3 to C_6 alkenyl, C_3 to C_6 alkynyl, C_1 to C_6 perfluoro alkyl, $S(O)_n$—C_1–C_6 alkyl $S(O)_n$ aryl where n is 0, 1 or 2; or COheteroaryl, wherein heteroaryl is a 5–10 membered mono or bicyclic heteroaryl group having 1 to 3 heteroatoms selected independently from O, S or NR^7 and aryl is phenyl or naphthyl, optionally substituted by 1 or 2 groups selected from halogen, cyano, amino, nitro, C_1–C_6 alkyl, C_1–C_6 alkoxy, or hydroxy;

and R^7 is C_7–C_{11} aroyl, C_2–C_6 alkanoyl, C_1–C_{12} perfluoro alkyl, $S(O)_n$—C_1–C_6-alkyl, $S(O)_n$-aryl where n is 0, 1 or 2; COO—C_1–C_6-alkyl, COOaryl, $CONHR^6$, $CONR^6R^6$, CONHOH, $SO_2NR^6R^6$, SO_2CF_3, SO_2NHheteroaryl, SO_2NHCOaryl, CONHSO—C_1–C_6-alkyl, $CONHSO_2$aryl, aryl, or heteroaryl, where aryl is phenyl or naphthyl, optionally substituted by 1 or 2 groups selected independently from halogen, cyano, amino, nitro, C_1–C_6 alkyl, C_1–C_6 alkoxy, or hydroxy; and heteroaryl is a 5–10 membered mono or bicyclic heteroaryl group having 1 to 3 heteroatoms selected independently from O, S or N—C_1–C_6 alkyl;

alkyl of 1 to 18 carbon atoms, optionally substituted with one or two groups selected independently from R^5;

alkenyl of 3 to 18 carbon atoms having from 1 to 3 double bonds, optionally substituted with one or two groups selected independently from R^5;

alkynyl of 3 to 18 carbon atoms having from 1 to 3 triple bonds, optionally substituted with one or two groups selected independently from R^5;

arylalkyl of 7 to 16 carbon atoms, wherein aryl is optionally substituted with one or two groups selected independently from R^5;

heteroarylalkyl wherein alkyl is from 1 to 6 carbon atoms and heteroaryl contains 1 or 2 heteroatoms selected from O, S or N and is optionally substituted with one or two groups selected independently from R^5;

biphenylalkyl of 13 to 18 carbon atoms, wherein biphenyl is optionally substituted with one or two groups selected independently from R^5;

arylalkenyl of 8 to 16 carbon atoms, wherein aryl is optionally substituted with one or two groups selected independently from R^5;

cycloalkylalkyl or bicycloalkylalkyl of 4 to 12 carbon atoms, wherein the cycloalkyl or bicycloalkyl group is optionally substituted with one or two groups selected independently from R^5;

saturated or unsaturated mono or bicyclic heterocycle containing one heteroatom selected from O, S or N—C_1–C_6 alkyl, optionally substituted with one or two groups selected independently from R^5; or

R^8R^9N—C_1–C_6-alkoxyaryl-C_1–C_6-alkyl where R^8 and R^9 are independently selected from C_1–C_6 alkyl or R^8 and R^9 together with the interposed nitrogen forms a 5–7 membered saturated heterocyclic ring optionally containing an oxygen atom, wherein the aryl group is phenyl or naphthyl;

or a pharmaceutically acceptable salt thereof.

US 6,331,564 B1

USE OF TRIARYL METHANE COMPOUNDS FOR INHIBITING UNWANTED CELLULAR PROLIFERATION ASSOCIATED WITH INFLAMMATORY DISEASE

Carlo Brugnara, Newton Highlands; Jose Halperin, Brookline; Emile M. Bellot, Jr., Beverly; Mark Froimowitz, Newton Centre; Richard John Lombardy, Littleton; John J. Clifford, Bedford, all of Mass.; Ying-Duo Gao, Edison, N.J.; Reem M. Haidar, Woburn, Mass.; Eugene W. Kelleher, Bedford, Mass.; Falguni M. Kher, Billerica, Mass.; Adel M. Moussa, Burlington, Mass.; Yesh P. Sachdeva, Concord, Mass.; Minghua Sun, Libertyville, Ill., and Heather N. Taft, Littleton, Mass., assignors to Ion Pharmaceuticals, Inc., Cambridge, Mass.

Continuation of application No. 08/822,550, filed on Mar. 19, 1997, now Pat. No. 6,028,103, which is a continuation-in-part of application No. 08/618,952, filed on Mar. 20, 1996, now abandoned, and a continuation-in-part of application No. 08/618,760, filed on Mar. 20, 1996, now abandoned, each which is a continuation-in-part of application No. 08/307,874, filed on Sep. 16, 1994, now abandoned, application No. 09/159,335, which is a continuation-in-part of application No. 08/618,762, filed on Mar. 20, 1996, now abandoned, and a continuation-in-part of application No. 08/618,759, filed on Mar. 20, 1996, now abandoned, each which is a continuation-in-part of application No. 08/307,887, filed on Sep. 16, 1994, now abandoned. This application Sep. 23, 1998, Appl. No. 159,335.

This patent is subject to a terminal disclaimer.

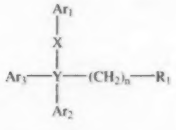
Int. Cl. A61K *31/275;* **C09B** *11/04;* **C07F** *7/08;* **C07C** *211/03*

U.S. Cl. 514—520 **13 Claims**

1. A method for inhibiting unwanted cellular proliferation associated with an inflammatory disease, said method comprising the step of contacting a cell the proliferation of which contributes to inflammation in situ with an effective amount of

a compound having the formula:

(I)



or a pharmaceutically acceptable salt or hydrate thereof, wherein:

n is 0, 1, 2, 3 or 4;

X is absent, (C_1–C_3) alkyl, (C_1–C_3) alkenyl, or (C_1–C_3) alkynyl;

Y is C, N, P, Si or Ge;

R_1 is absent, -halo, —R, —OR, —SR, —NR_2, —ONR_2, —NO_2, —CN, —C(O)R, —C(S)R, —C(O)OR, —C(S)OR, —C(O)SR, —C(S)SR, —$C(O)NR_2$, —$C(S)NR_2$, —C(O)NR(OR), —C(S)NR(OR), —C(O)NR(SR), C(S)NR(SR), —$CH(CN)_2$, —$CH[C(O)R]_2$, —$CH[C(S)R]_2$, —$CH[C(O)OR]_2$, —$CH[C(S)OR]_2$, —$CH[C(O)SR]_2$, —$CH[C(S)SR]_2$ or aryl;

Ar_1 is aryl, substituted aryl, (C_5–C_8) cycloalkyl;

Ar_2 is aryl or substituted aryl;

Ar_3 is aryl, substituted aryl, or biaryl;

each R is independently selected from the group consisting of —H, (C_1–C_6) alkyl, substituted (C_1–C_6) alkyl, (C_1–C_6) alkenyl, substituted (C_1–C_6) alkenyl (C_1–C_6) alkynyl, substituted (C_1–C_6) alkynyl, and (C_1–C_6) alkoxy;

the aryl substituents are each independently selected from the group consisting of -halo, trihalomethyl, —R, —R', —OR', —SR', NR'_2, —NO_2, —CN, —C(O)R', —C(S)R', —C(O)OR', —C(S)OR', —C(O)SR' and —C(S)SR';

the alkyl, alkenyl and alkynyl substituents are each independently selected from the group consisting of -halo, —R', —OR', —SR', NR'_2, —NO_2, —CN, —C(O)R', —C(S)R', —C(O)OR', —C(S)OR', —C(O)SR', —C(S)SR', aryl, γ-butyrolactoniyl, pyrrolidinyl and succinic anhydridyl; and

each R' is independently selected from the group consisting of —H, (C_1–C_6) alkyl, (C_1–C_6) alkenyl and (C_1–C_6) alkynyl.

US 6,331,565 B1

DICAFFEOYLQUINIC ACID FOR TREATING HEPATITIS B AND THE DISEASES ASSOCIATED WITH RETROVIRUS, AND THE NEW CAFFEOYLQUINIC ACID DERIVATIVES

Junxing Dong; Zhongming Tang; Zhibao Mi, and Bingji Wang, all of Beijing, China, assignors to Institute of Radiation Medicine Academy of Military Medical Sciences of the PLA, Beijing, China

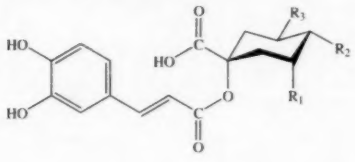
Continuation-in-part of application No. PCT/CN97/00087, filed on Aug. 27, 1997. This application Mar. 1, 1999, Appl. No. 260,740.

Claims priority, application China, Aug. 29, 1996, 96111691

Int. Cl. A01N *37/10*

U.S. Cl. 514—532 **6 Claims**

1. A method for the treatment of Hepatitis B and disease associated with retrovirus by administering to a patient in need thereof, a dicaffeoylquinic acid derivative of the formula:



in which R_1, R_2 and R_3 may be the same or different and represent OH or caffeoyloxy group, when R_1 is caffeoyloxy group, both R_2 and R_3 represent OH; or when R_2 is caffeoylxy group, both R_1 and R_3 represent Oh; when R_3 is caffeoyloxy group, both R_1 and R_2 represent OH.

US 6,331,566 B1

HETEROATOM-INTERRUPTED ANALOGS OF 15-HYDROXYEICOSATETRAENOIC ACID AND METHODS OF USE

Raymond E. Conrow, Crowley, and Peter G. Klimko, Fort Worth, both of Tex., assignors to Alcon Universal Ltd., Hunenberg, Switzerland

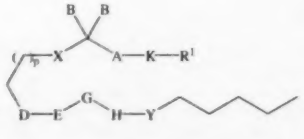
Provisional application No. 60/164,383, filed on Nov. 9, 1999. This application Oct. 23, 2000, Appl. No. 694,129.

Int. Cl. A01N *37/06;31/22;* **C07C** *321/00;59/74;315/00*

U.S. Cl. 514—549 **14 Claims**

1. A composition for the treatment of dry eye and other disorders requiring the wetting of the eye comprising a pharmaceutically acceptable carrier and a pharmaceutically effective amount of one or more compounds of the following formula I:

I



wherein:

R^1 is CO_2R, $CONR^2R^3$, CH_2OR^4, $CH_2NR^5R^6$, CH_2N_3, CH_2—Hal, CH_2NO_2, CH_2SR^{20}, $COSR^{21}$ or 2,3,4,5-tetrazol-1-yl, wherein:

R is H or CO_2R forms a pharmaceutically acceptable salt or a pharmaceutically acceptable ester;

NR^2R^3 and NR^5R^6 are the same or different and comprise a free or functionally modified amino group;

OR^4 comprises a free or functionally modified hydroxy group;

Hal is F, Cl, Br or I;

SR^{20} comprises a free or functionally modified thiol group;

R^{21} is H, or $COSR^{21}$ forms a pharmaceutically acceptable salt or a pharmaceutically acceptable thioester;

K is C_2–C_8 alkyl, alkenyl, or alkynyl or a C_3–C_8 allenyl group;

A and X are the same or different and are a direct bond, CH_2, NR^7, O or S, with the proviso that at least one of A and X is S;

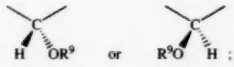
B is H, or BB together comprises a double bonded O, S or NR^8, with the proviso that BB comprises a double bonded O, S or NR^8 when A and X are the same or different and are NR^7, O or S; wherein:

NR^7 and NR^8 are the same or different and comprise a functionally modified amino group;

p is 0 or 1;

D-E and G-H are the same or different and are CH_2CH_2, CH=CH or C≡C; and

Y is C(O) or Y is



wherein R^9O constitutes a free or functionally modified hydroxy group.

US 6,331,567 B1

EDIBLE COMPOSITION CONTAINING ZINC AND LINOLEIC ACID

Timothy David George Watson, Lochwinnoch, and Katrina Anne Marsh, Waltham-on-the-Wolds, both of United Kingdom, assignors to Mars UK Limited, Slough, United Kingdom

Provisional application No. 60/064,288, filed on Nov. 6, 1997. This application Jun. 12, 1998, Appl. No. 96,471.

Claims priority, application United Kingdom, Jun. 13, 1997, 9712420

Int. Cl. A61K *31/20;33/32*

U.S. Cl. 514—560 **33 Claims**

1. A diet or foodstuff, for an animal, comprising synergistic effective amounts of:

A) zinc at a concentration of at least 28 mg/400 kcal and linoleic acid at a concentration of at least 4 g/400 kcal; or

B) zinc at a concentration of at least 20 mg/400 kcal and linoleic acid at a concentration of at least 6 g/400 kcal.

US 6,331,568 B1

PHARMACEUTICAL PREPARATION COMPRISING EICOSAPENTAENOIC ACID AND/OR STEARIDONIC ACID

David Frederick Horrobin, Stirling, United Kingdom, assignor to Scotia Holdings PLC., Peasmarsh, United Kingdom

PCT No. PCT/GB97/02738, § 371 Date Jun. 10, 1999, § 102(e) Date Jun. 10, 1999, PCT Pub. No. WO98/16216, PCT Pub. Date Apr. 23, 1998

PCT Filed Oct. 7, 1997, Appl. No. 284,231

Claims priority, application United Kingdom, Oct. 11, 1996, 9621294; Dec. 16, 1996, 9626062

Int. Cl. A61K *31/20;31/225*

U.S. Cl. 514—560 **10 Claims**

1. A method of treatment of schizophrenia, whereby an oil is administered comprising

i) an essential fatty acid (EFA) selected from the group consisting of eicosapentaenoic acid (EPA) and stearidonic acid (SA) in amounts of more than 20% by weight of the total fatty acids present and

ii) optionally, n-6 EFAs,

wherein the weight ratio of SA/EPA to said n-6 EFAs, if present, is not less than 3:1.

US 6,331,569 B1

PREPARATION FOR IMPROVING HAIR GROWTH, THE SKIN STRUCTURE AND/OR NAIL REGENERATION

Friedrich Kisters, Seeblickstrasse 34-36, CH-8280 Kreuzlingen 4, Switzerland; Reinhold Nöfer, Ulmerstrasse 2, D-87751 Heimertingen, Germany; Günther Kessler, deceased, late of Tettnang, Germany; by Wiltrud Elfriede Bichsel-Kessler, legal representative, Hofkammerstrasse 15, 80069 Tettnang, Germany; by Gerlinde Margarete Kisters, legal representative, Seeblickstrasse 34, CH-8280 Kreuzlingen, Germany, and by Ingrid Hildegund Kessler-Wetzig, legal representative, Heimstrasse 15, 89075 Ulm, Germany

PCT No. PCT/CH96/00466, § 371 Date Jun. 22, 1999, § 102(e) Date Jun. 22, 1999, PCT Pub. No. WO97/25972, PCT Pub. Date Jul. 24, 1997

PCT Filed Dec. 31, 1996, Appl. No. 101,817

Claims priority, application WIPO, Jan. 17, 1996, PCT/CH96/00024

Int. Cl. A61K *31/195*

U.S. Cl. 514—561 **11 Claims**

1. A method for improving hair growth, skin structure and/or nail regeneration, comprising administering to a patient in need thereof a preparation comprising a mixture of amino acids, said mixture having a ratio of the amino acids valine to leucine to isoleucine of 7:17:11 plus/minus 20%, said mixture further comprising an effective amount of proline and at least one carrier.

US 6,331,570 B1

ACTIVE ENANTIOMER OF RARγ-SPECIFIC AGONIST

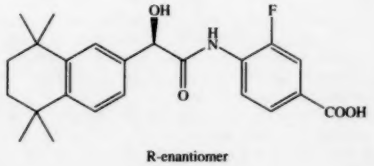
Makonen Belema, New Haven; Fred C. Zusi, Hamden, both of Conn., and Kenneth M. Tramposch, Winston-Salem, N.C., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Provisional application No. 60/125,891, filed on Mar. 24, 1999, Provisional application No. 60/101,747, filed on Sep. 24, 1998. This application Sep. 21, 1999, Appl. No. 401,356.

Int. Cl. A61K *31/195;* **C07C** *229/28*

U.S. Cl. 514—563 **1 Claim**

1. A method for the prevention of spontaneous squamous cell carcinoma in immunocompromised human transplant patients which comprises systemically administering a therapeutically effective amount of a compound of the formula



R-enantiomer

or a pharmaceutically acceptable salt thereof.

US 6,331,571 B1

METHODS OF TREATING AND PREVENTING ATTENTION DEFICIT DISORDERS

Thomas P. Jerussi, Framingham; Chrisantha H. Senanayake, Shrewsbury, and Qun K. Fang, Wellesley, all of Mass., assignors to Sepracor, Inc., Marlbourgh, Mass.

Provisional application No. 60/097,665, filed on Aug. 24, 1998, Provisional application No. 60/099,306, filed on Sep. 2, 1998. This application Aug. 11, 1999, Appl. No. 372,158.

Int. Cl. A61K *31/135*

U.S. Cl. 514—646 4 Claims

1. A method of treating or preventing an affective disorder selected from the group consisting of attention deficit disorder and attention deficit disorder with hyperactivity which comprises administering to a patient in need of such treatment or prevention a therapeutically or prophylactically effective amount of a racemic or optically pure sibutramine metabolite, or a pharmaceutically acceptable salt, solvate, or clathrate thereof.

US 6,331,572 B1

NON-HAZARDOUS PEST CONTROL

Steven M. Bessette, Alpharetta, Ga., and Myron A. Beigler, Santa Rosa, Calif., assignors to Ecosmart Technologies, Incorporated, Franklin, Tenn.

Division of application No. 09/056,712, filed on Apr. 8, 1998, now Pat. No. 6,183,767, which is a division of application No. 08/870,560, filed on Jun. 6, 1997, now Pat. No. 6,004,569, which is a continuation-in-part of application No. 08/657,585, filed on Jun. 7, 1996, now Pat. No. 6,114,384, which is a continuation-in-part of application No. 08/553,475, filed as application No. PCT/US94/05823, filed on May 20, 1994, now Pat. No. 5,693,344, which is a continuation-in-part of application No. 08/065,594, filed on May 21, 1993, now Pat. No. 5,439,690. This application Dec. 22, 1999, Appl. No. 469,767.

This patent is subject to a terminal disclaimer.

Int. Cl. A01N *31/08;31/06*

U.S. Cl. 514—731 5 Claims

1. A method of killing Asian army worm larvae comprising the steps of:

preparing carvacrol in a carrier,

applying the carvacrol in the carrier to the Asian army worm larvae and the habitat thereof wherein the Asian army worm larvae are exposed to an effective dosage to kill the Asian army worm larvae.

US 6,331,573 B1

INCREASED LIQUID SENSITIVITY DURING FISCHER-TROPSCH SYNTHESIS BY OLEFIN INCORPORATION

Charles L. Kibby, Benicia, Calif., assignor to Chevron U.S.A. Inc., San Ramon, Calif.

Filed Feb. 29, 2000, Appl. No. 515,693

Int. Cl. C07C *27/00;5/23;5/13*

U.S. Cl. 518—706 15 Claims

1. An integrated process for preparing liquid fuels, the process comprising:

(a) subjecting syngas with a hydrogen/carbon monoxide ratio of between about 0.5 and 1.0 to Fischer-Tropsch reaction conditions where the catalyst used for the Fischer-Tropsch reaction is one which provides low to moderate chain growth probabilities and has an alpha value between 0.6–0.8;

(b) optionally removing water and/or C_5+ hydrocarbons from the product stream;

(c) subjecting the product from step (a) or (b) to Fischer-Tropsch reaction conditions where the catalyst used for the Fischer-Tropsch reaction is one which provides high chain growth probabilities and has an alpha value above 0.8, where the hydrogen/carbon monoxide ratio is between about 1.0 and 2.0; and

(d) isolating the product of the reaction.

US 6,331,574 B1

PROCESS FOR THE PREPARATION OF HIGH ACTIVITY CARBON MONOXIDE HYDROGENATION CATALYSTS; THE CATALYST COMPOSITIONS, USE OF THE CATALYSTS FOR CONDUCTING SUCH REACTIONS, AND THE PRODUCTS OF SUCH REACTIONS

Albert L'Vovoch Lapidus, Kashirskoje Shosse; Alla Jurievna Krylova, Graivorovskaja Ulitsa, both of Russian Federation; Michel A. Daage; Russell J. Koveal, both of Baton Rouge, La., and Rocco A. Fiato, Basking Ridge, N.J., assignors to ExxonMobil Research and Engineering Company, Annandale, N.J.

Filed Oct. 8, 1999, Appl. No. 415,084

Int. Cl. C07C *27/00;5/13;* B01J *20/34*

U.S. Cl. 518—709 11 Claims

1. A process for the production of hydrocarbons from hydrogen and carbon monoxide comprising contacting hydrogen and carbon monoxide, at hydrocarbon synthesis reaction conditions, with a catalyst comprising a powder or particulate solids support and an oxide, or oxides of a metal, or metals; wherein the activity of the catalyst is increased by removing some of the metal atoms from said catalyst using a chelating compound having nitrogen or oxygen containing compounds and having a denticity of at least two.

US 6,331,575 B1

PREPARATION OF HIGH ACTIVITY CATALYSTS; THE CATALYSTS AND THEIR USE

Charles H. Mauldin, Baton Rouge, La., assignor to Exxon Research and Engineering Company, Annandale, N.J.

Division of application No. 08/845,015, filed on Apr. 22, 1997. This application Sep. 15, 1998, Appl. No. 153,364.

Int. Cl. C07C *27/00;5/13;* C10G *73/02;* C10L *1/10*

U.S. Cl. 518—715 9 Claims

1. A process for the production of C_5+ liquid hydrocarbons from a hydrogen and carbon monoxide synthesis gas by contact of the synthesis gas at Fischer Tropsch reaction conditions with a catalyst prepared by impregnating a refractory in organic oxide support with a solution containing (a) a compound or salt, of a catalytic metal, and (b) a polyol having the formula $CnH_{2n+2}O_x$; where n is an integer from 2 to 6, x is an integer from 2 to 11, sufficient to disp the compound or salt onto the support, drying and removing the polyol, forming oxides of the metal on the support, and activating the catalyst.

US 6,331,576 B1

SURFACE-DECORATED FOAM SKIN OF CROSS-LINKED RUBBERY SOFT OLEFIN RESIN

Koichi Kusakawa, and Shigeki Ichimura, both of Komagane, Japan, assignors to NHK Spring Co Ltd, Kanagawa, Japan

PCT No. PCT/JP99/03376, § 371 Date Dec. 19, 2000, § 102(e) Date Dec. 19, 2000, PCT Pub. No. WO99/67323, PCT Pub. Date Dec. 29, 1999

PCT Filed Jun. 24, 1999, Appl. No. 719,872

Claims priority, application Japan, Jun. 25, 1998, 10/179322

Int. Cl. C08J *9/00;9/34*

U.S. Cl. 521—142 4 Claims

1. A surface decorated foam skin of cross-linked rubbery soft olefin resin, comprising rubbery soft olefin resin, characterizing by having average cell diameter of 50 to 400 μm, a degree of crystallinity of 5 to 40% and a hysteresis loss of 35% or lower.

US 6,331,577 B1

PROCESS FOR PRODUCING ELASTIC POLYURETHANE MOLDINGS WITH COMPACT SURFACES AND CELLULAR CORES

Otto Volkert, Weisenheim, and Klaus Pittrich, Herrsching, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP97/02101, § 371 Date Apr. 30, 1999, § 102(e) Date Apr. 30, 1999, PCT Pub. No. WO97/42244, PCT Pub. Date Nov. 13, 1997

PCT Filed Apr. 24, 1997, Appl. No. 171,537

Claims priority, application Germany, May 8, 1996, 196 18 392

Int. Cl. C08G *18/10*

U.S. Cl. 521—159 **16 Claims**

1. A process for producing high elasticity polyurethane moldings having a compact surface and a cellular core comprising the step of reacting

a) modified organic polyisocyanate with

b) at least one compound containing at least two reactive hydrogen atoms and having a molecular weight of from 1000 to 8000, and optionally

c) chain extenders, in the presence of

d) blowing agents,

e) catalysts and, if desired,

f) auxiliaries and/or additives in a closed mold with compaction, wherein the modified organic polyisocyanate a) comprises the reaction product of 4,4'-diisocyanatodiphenylmethane with at least one polyoxypropylene polyol and/or polyoxypropylene-polyoxyethylene polyol, the modified organic polyisocyanate has an NCO content of <15% by weight, the chain extenders c) comprise diols having a molecular weight of <400, the weight ratio of a) to the sum of the components b) to f) in the reaction is greater than 1, the blowing agent d) comprises water, and

wherein the components a) through f) are reacted in amounts sufficient to provide polyurethane moldings having a density below 400 grams per liter and a rebound resilience in accordance with DIN 53512 of at least 35%.

US 6,331,578 B1

PROCESS FOR PREPARING INTERPENETRATING POLYMER NETWORKS OF CONTROLLED MORPHOLOGY

Josephine Turner, 4725 Lloydtown Rd., Keltleby, Ontario, Canada, L0G 1J0, and Yu-Ling Cheng, 1379 Glenburine Road, Mississauga, Ontario, Canada, L5G 3C7

Provisional application No. 60/108,982, filed on Nov. 18, 1998. This application Nov. 17, 1999, Appl. No. 442,830.

Int. Cl. C08J *7/16*

U.S. Cl. 523—105 **20 Claims**

10. An IPN of at least one hydrophobic polymer and at least one hydrophilic polymer, wherein the IPN is bicontinuous throughout the surface and body of the IPN.

18. A product selected from the group consisting of a contact lens, an intraocular lens, a blood contacting material, a wound dressing, catheters and drug delivery systems made from made from an IPN according to claim **10**, **11** or **12**.

US 6,331,579 B1

AQUEOUS CORRECTION FLUIDS

Norman G. Sanborn, South Weymouth, Mass., assignor to The Gillette Company, South Boston, Mass.

Continuation of application No. 08/273,093, filed on Jul. 8, 1994, now abandoned. This application Oct. 21, 1996, Appl. No. 735,196.

Int. Cl. C09D *10/00*

U.S. Cl. 523—161 **9 Claims**

1. An aqueous correction fluid comprising

as a cationic stain blocking agent, a terpolymer of ethyl methacrylate, methyl methacrylate, and dimethyl amino ethyl methacrylate,

at least 22% of an alumina treated titanium dioxide,

at least 20% of an acid activated clay, and

water,

said acid activated clay and said alumina treated titanium dioxide being present in a weight ratio of between 0.7:1 and 1.2:1.

US 6,331,580 B1

MBS IMPACT MODIFIERS

Linda Katherine Molnar, Philadelphia, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Provisional application No. 60/099,560, filed on Sep. 9, 1998. This application Sep. 3, 1999, Appl. No. 389,957.

Int. Cl. C08F *255/00;12/00;257/00*

U.S. Cl. 523—201 **12 Claims**

1. A core-shell impact modifier composition comprising:

(A) from about 70 to about 85 parts of a core comprising from about 15 to about 35 percent by weight of units derived from at least one vinyl aromatic monomer, and from about 65 to about 85 percent by weight of units derived from at least one diolefin monomer;

(B) from about 8 to about 14 parts of an inner graft stage comprising at least one vinyl aromatic monomer or at least one C1–C4 alkyl methacrylate monomer;

(C) from about 0.1 to about 5 parts of an intermediate sealer stage consisting essentially of at least one of the following monomers: a C1–C8 alkyl acrylate or a polyunsaturated crosslinker; and

(D) from about 10 to about 16 parts of an outer shell comprising at least one C1– C4 alkyl (meth)acrylate monomers or at least one vinyl aromatic monomer,

wherein the intermediate sealer stage improves the coverage of the outer shell on the inner stage and core.

US 6,331,581 B1

METHOD FOR COLOR MATCHING OF POWDER COATING COMPOSITION AND PROCESS FOR THE PREPARATION THEREOF

Kazuhiko Ohnishi, Yokohama; Hidefumi Takanashi, and Yugen Kawamoto, both of Hiratsuka, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo-Ken, Japan

Filed Dec. 22, 1999, Appl. No. 469,228

Claims priority, application Japan, Dec. 24, 1998, 10-365899

Int. Cl. C08J *3/12;* **C08K** *5/01;5/053*

U.S. Cl. 523—221 **11 Claims**

1. A method for color matching a thermosetting powder coating composition, the method comprising the steps of: dryblending two or more starting colored thermosetting powder coating compositions of different colors having an average particle size of 10 μm or less to achieve color matching; granulating the dryblend to a particle size in the range which is suitable for coating, by adding at least one binder selected from the group consisting of an aqueous solution of polyethylene glycol and an aqueous dispersion of paraffin wax; and drying the granules to remove the water.

US 6,331,582 B1

LOW GLOSS COATING

Augustin T. Chen, Cheshire, Conn.; Paul E. Kestyn, Greenfield, and Hong Zhao, Millbury, both of Mass., assignors to Solutia Inc., St. Louis, Mo.

Provisional application No. 60/132,072, filed on May 3, 1999. This application Apr. 3, 2000, Appl. No. 541,644.

Int. Cl. C08K *3/11*

U.S. Cl. 523—400 **11 Claims**

5. A thermally activated curable liquid coating composition comprising, in admixture:

a) crosslinking agent selected from the group consisting of alkoxymethylaminotriazines and polyisocyanates;
b) binder resin having functional groups coreactive with the crosslinking agent;
c) polyvinyl acetal matting agent containing acetal groups derived from one or more aliphatic or aromatic aldehydes having 1 to 10 carbon atoms; and
d) pigment colorant.

US 6,331,583 B1

ACID CATALYZED POLYMERIZATION OF AQUEOUS EPOXY RESIN EMULSIONS AND USES THEREOF

Frederick Herbert Walker, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 4, 2000, Appl. No. 542,759
Int. Cl. C08K *3/20;* **C08L** *63/02*
U.S. Cl. 523—404 **36 Claims**

7. A method for preparing an aqueous polymeric polyol emulsion which comprises dispersing a hydrophobic cyclic ether monomer in water in the presence of a surfactant to form dispersed monomer particles and non-reversibly polymerizing the waterborne cyclic ether monomer particles in the presence of an effective amount of a water soluble acid material having a pKa of $\leqq 1$ and stopping the polymerization after a suitable degree of polymerization has occurred by adding a basic substance.

23. A coating composition comprising the aqueous polymeric polyol emulsion of claim **7** and an OH-reactive crosslinking agent.

31. The coating composition of claim **23** in which the basic substance is an alkali or alkaline metal hydroxide or an amine.

US 6,331,584 B1

FLAME-RETARDANT POLYCARBONATE RESIN COMPOSITION AND ITS INJECTION MOLDINGS

Akio Nodera, and Naoki Mitsuta, both of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1999, Appl. No. 383,397
Claims priority, application Japan, Sep. 29, 1998, 10-274518
Int. Cl. C08K *5/49;* **C08L** *69/00*
U.S. Cl. 524—115 **9 Claims**

1. A flame-retardant polycarbonate resin composition comprising:

(i) 100 parts by weight of a resin or resin mixture of (A) from 20 to 100% by weight of a polycarbonate resin and (B) from 0 to 80% by weight of a styrenic resin, (ii) from 1 to 30 parts by weight of (C) a phosphate compound having a melting point of not less than 70° C. and (iii) from 0.1 to 10 parts by weight of (D) at least one member selected from the group consisting of polyglycerins having at least two repeating units, polyalkylene glycols having a molecular weight ranging from 500 to 20,000, esters of polyglycerins and C_5–C_{34}-fatty acids, esters of polyalkylene glycols and C_5–C_{34}-fatty acids and polyesters of polycarboxylic acids with polyalcohols and having a molecular weight ranging from 500 to 20,000.

US 6,331,585 B1

FORMULATIONS FOR MAKING PROTECTIVE PAINTS AND COATINGS

Michael Merkel, Auenstr. 3, 95185 Gattendorf, Germany

Filed Mar. 23, 1999, Appl. No. 274,833
Int. Cl. C08K *5/05;3/10;3/30;3/26*
U.S. Cl. 524—386 **16 Claims**

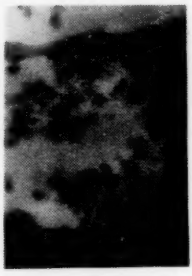
1. A coating mixture comprising a water-based solution of a resin mixed with a hardener, the coating mixture being prepared by mixing at least one of the resin and the hardener with a formulation comprising a combination of a defoamer; titanium dioxide (TiO_2); at least one of barite ($BaSO_4$) or calcite ($CaCO_3$); at least one of propyleneglycol, a corrosive inhibitor and a retarder; and a thickener, wherein the formulation does not comprise use of a catalyst, curing agent or organic solvent and has an extended pot life.

US 6,331,586 B1

CONDUCTIVE POLYMER BLENDS WITH FINELY DIVIDED CONDUCTIVE MATERIAL SELECTIVELY LOCALIZED IN CONTINUOUS POLYMER PHASE OR CONTINUOUS INTERFACE

Alain Thielen, Thimister; Baudouin Valange, Trooz, both of Belgium, and Stefan Viering, Aachen, Germany, assignors to Cabot Corporation, Boston, Mass.

Provisional application No. 60/074,483, filed on Feb. 12, 1998. This application Feb. 11, 1999, Appl. No. 248,277.
Int. Cl. C08K *3/00;* **C08L** *83/00;31/04*
U.S. Cl. 524—401 **27 Claims**



1. A conductive polymer blend comprising:

(a) at least two polymers which are at least partially immiscible with each other, and are present in proportions such that each polymer forms a respective continuous phase and the two respective continuous polymer phases are co-continuous with each other in the polymer blend; and

(b) at least one conductive material in particulate or fiber form which is substantially localized in one of said co-continuous polymer phases or substantially localized at a continuous interface between said co-continuous polymer phases, wherein said at least two polymers are a pair selected from the following pairs of polymers:

HDPE/TPU
HDPE/EPR
HDPE/EPDM
HDPE/mLLDPE
PP/EPDM
PP/EPR
PP/mLLDPE
mLLDPE/EPR

wherein	HDPE:	high density polyethylene
	TPU:	thermoplastic urethane
	EPR:	ethylene propylene rubber
	EPDM:	ethylene propylene diene rubber
	mLLDPE:	metallocene catalyzed linear low density polyethylene
	PP:	polypropylene.

US 6,331,587 B1

POLYVINYL ESTER DISPERSIONS AND METHODS FOR THEIR PREPARATION

Ulrich Geissler, Hochheim, Germany, assignor to Clariant GmbH, Frankfurt, Germany

Filed Aug. 23, 1996, Appl. No. 701,988

Claims priority, application Germany, Aug. 26, 1995, 195 31 515

Int. Cl. C08L *19/02*

U.S. Cl. 524—459 19 Claims

1. A process for the preparation of a dispersion powder from a dispersion having a solids content of at least 45% by weight, which consists essentially of a homopolymer or copolymer of a vinyl ester and is stabilized with a protective colloid consisting essentially of polyvinyl alcohol,

said process consisting essentially of polymerizing monomers consisting of the following:

a) at least one vinyl ester of a linear or branched monocarboxylic acid monomer having 2 to 12 carbon atoms; and

b) optional further monomers which can be copolymerized with said vinyl ester using a polymerization initiator consisting of a water-soluble cationic azo compound,

wherein said polymerizing is conducted in the presence of the protective colloid consisting essentially of polyvinyl alcohol and in the complete absence of catonic comonomers, and wherein said polyvinyl alcohol is employed as the protective colloid in an amount of 4 to 15% by weight, based on the total weight of said monomers,

and spray drying said dispersion.

US 6,331,588 B1

ADDITION CURING TYPE LIQUID SILICONE RUBBER COMPOSITIONS

Syuuichi Azechi; Yujiro Taira, and Takeo Yoshida, all of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 9, 2000, Appl. No. 588,900

Claims priority, application Japan, Jun. 9, 1999, 11-163109

Int. Cl. C08K *5/5415*

U.S. Cl. 524—493 7 Claims

1. An addition curing type liquid silicone rubber composition comprising

(A) an addition curing type organopolysiloxane component, and

(B) reinforcing silica fines having a specific surface area of at least 50 m^2/g as measured by the BET method and surface treated with an organosilicon compound such that the content of carbon on the surface is at least 3% by weight.

US 6,331,589 B1

ORGANIC POLYMERS CONTAINING POLYETHYLENE OR POLYSTYRENE POLYSILOXANE DIBLOCK COPOLYMERS AS MELT PROCESSING AIDS

Ronald James Hoxmeier, Houston, Tex., assignor to Kraton Polymers U.S. LLC, Houston, Tex.

Provisional application No. 60/109,778, filed on Nov. 25, 1998. This application Nov. 17, 1999, Appl. No. 442,220.

Int. Cl. C08G *77/442*

U.S. Cl. 525—54.3 14 Claims

1. An organic polymer composition which comprises:

(a) 100 parts by weight of a composition comprising a first organic polymer and from 0.1 to 5 percent by weight of a melt processing aid which is a diblock copolymer of polyethylene and a polysiloxane or a diblock copolymer of polystyrene and a polysiloxane wherein the diblock copolymer has an overall weight average molecular weight of from 500 to 50,000 and a polysiloxane polymer block content of from 20 to 90 percent by weight; and

(b) from 8 to 50 parts by weight of a second organic polymer; and

(c) from 20 to 200 parts by weight of an oil.

US 6,331,590 B1

POLYPROPYLENE WAX

Hans-Friedrich Herrmann, Gross-Gerau, and Gerd Hohner, Gersthofen, both of Germany, assignors to Clariant GmbH, Frankfurt, Germany

Division of application No. 09/112,855, filed on Jul. 10, 1998, now Pat. No. 6,143,846. This application May 25, 2000, Appl. No. 578,961.

Claims priority, application Germany, Jul. 11, 1997, 197 29 833

Int. Cl. C08L *23/12*; C09D *11/12;123/12*

U.S. Cl. 525—55 12 Claims

1. A method of using a polypropylene isotactic homopolymer or copolymer wax which has been prepared by polymerization using a bridged metallocene compound wherein said bridged metallocene compound comprises a hydrocarbon radical which forms a sandwich structure with a central atom and wherein said hydrocarbon radical is a substituted tetrahydroindenyl radical, unsubstituted tetrahydroindenyl radical, substituted cyclopentadienyl radical, substituted fluorenyl radical, substituted indenyl radical or substituted benzindenyl radical, in the presence of hydrogen and has a melt viscosity of less than 100 mPas, measured at 170° C., the method comprising incorporating the wax in a toner.

US 6,331,591 B1

CYCLOOLEFIN COPOLYMER RESIN COMPOSITION AND PROCESS FOR PREPARING THE SAME

Masahiro Miyamoto, Kobe; Katsuhiko Kimura, Akashi, and Taizo Aoyama, Takasago, all of Japan, assignors to Kaneka Corporation, Osaka, Japan

PCT No. PCT/JP98/02913, § 371 Date Nov. 23, 1999, § 102(e) Date Nov. 23, 1999, PCT Pub. No. WO99/01506, PCT Pub. Date Jan. 14, 1999

PCT Filed Jun. 30, 1998, Appl. No. 424,360

Claims priority, application Japan, Jul. 2, 1997, 9-193199

Int. Cl. C08G *63/48*

U.S. Cl. 525—70 10 Claims

1. A transparent cycloolefin copolymer resin composition comprising:

(A) a cycloolefin copolymer and (B) 1 to 100 parts by weight, per 100 parts by weight of said cycloolefin copolymer, of at least one rubber-like polymer selected from the group consisting of (B1) an aromatic vinyl-isobutylene copolymer and (B2) an aromatic vinyl-conjugated diene copolymer. wherein the difference in refractive index (nD) at 20° C. between the components (A) and (B) is at most 0.015 and the particle size of the component (B) dispersed in the component (A) is from 0.4 to 3 μm; and

1 to 80 parts by weight of a core-shell polymer (C) per 100 parts by weight of the component (A), wherein the difference in refractive index (nD) at 20° C. between the components (A) and (C) is at most 0.015 and the primary particle size of the component (C) is from 0.1 to 1.0 μm.

US 6,331,592 B1

NON-MASSING TOUGHENERS FOR POLYAMIDES

Chun Sing Wong, Kingston, Canada, assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/CA98/00875, § 371 Date Jun. 21, 2000, § 102(e) Date Jun. 21, 2000, PCT Pub. No. WO99/24483, PCT Pub. Date May 20, 1999

Provisional application No. 60/064,747, filed on Nov. 7, 1997. This PCT application Sep. 17, 1998, Appl. No. 530,673.

Int. Cl. C08L *51/06*

U.S. Cl. 525—71 **14 Claims**

1. A polymeric toughening agent useful for improving the impact properties of polymeric compositions, comprising,

(a) a copolymer of ethylene with one or more α-olefins having at least 4 carbon atoms and having a density of 0.930 to 0.880 g/cc and a melt index (MI) of 0.01 to 50 dg/min at 190° C., 2.16 Kg;

(b) a massing polymer selected from a copolymer of ethylene with one or more α-olefins having at least 3 carbon atoms and having a density of 0.850 to 0.880 g/cc and an MI of 0.01 to 50 dg/min at 190° C., 2.16 Kg wherein the ratio of (a) to (b) is 10:90–90:10; and

(c) 0.9–5 wt % relative to (a) and (b) of a grafted monomer covalently bonded to (a) and (b) selected from an olefinic carboxylic acid or anhydride or derivative thereof.

US 6,331,593 B1

RESIN COMPOSITION PELLET

Hirofumi Johoji, and Toshiyuki Kuwabara, both of Chiba, Japan, assignors to Sumitomo Chemical Limited., Co., Osaka, Japan

Filed Jun. 14, 1999, Appl. No. 330,988

Claims priority, application Japan, Jun. 17, 1998, 10-169918

Int. Cl. C08F *8/00;* **C08L** *45/00;23/00;23/04*

U.S. Cl. 525—191 **27 Claims**

1. A resin composition pellet comprising:

(i) 15 to 65% by weight of a polyolefin-based resin, and

(ii) 85 to 35% by weight of an olefin-based copolymer obtained by copolymerizing a cyclic olefin and two or more olefins selected from ethylene, propylene and α-olefins having 4 to 20 carbon atoms in the presence of a catalyst for olefin polymerization, the total number of carbon atoms in the selected olefins being 7 or more, wherein

the content of said cyclic olefin is from 0.01 to 20 mol %,

the cyclic olefin is a cyclic monoolefin, or

the cyclic olefin is a cyclic polyene.

US 6,331,594 B2

PROCESS FOR PRODUCING BLENDS OF SYNDIOTACTIC 1,2-POLYBUTADIENE AND RUBBERY ELASTOMERS WITH AN IRON-BASED CATALYST SYSTEM

Steven Luo, Akron, Ohio, assignor to Bridgestone Corporation, Tokyo, Japan

Continuation of application No. 09/475,723, filed on Dec. 30, 1999, now Pat. No. 6,197,888. This application Jan. 23, 2001, Appl. No. 767,534.

This patent is subject to a terminal disclaimer.

Int. Cl. C08F *4/70;* **C08L** *9/00*

U.S. Cl. 525—247 **20 Claims**

1. A process for preparing blends of syndiotactic 1,2-polybutadiene and rubbery elastomers comprising the steps of:

(1) providing a mixture of high cis-1,4-polybutadiene rubber cement and 1,3-butadiene monomer; and

(2) combining (a) an iron-containing compound, (b) a hydrogen phosphite, and (c) an organoaluminum compound to form a catalyst composition outside the presence of the mixture of rubber cement and monomer; and

(3) adding the catalyst composition to the mixture and thereby polymerizing the 1,3-butadiene monomer into syndiotactic 1,2-polybutadiene within the rubber cement.

US 6,331,595 B1

GRAFTING OF MONOMERS ONTO POLYOLEFINS IN PRESENCE OF ORGANIC PEROXIDES

David John Mitchell, and Peter Yates Kelly, both of Kingston, Canada, assignors to DuPont Canada Inc., Mississauga, Canada

Filed Apr. 28, 1994, Appl. No. 234,959

Int. Cl. C08F *4/00;8/06;255/02*

U.S. Cl. 525—263 **12 Claims**

1. A method for the grafting of a monomer onto a polyolefin in the presence of an organic peroxide, said polyolefin being a polyolefin that, when molten, undergoes cross-linking in the presence of the organic peroxide, said method comprising:

(a) admixing in an extruder an admixture of (i) said polyolefin, (ii) 25 to 6000 ppm, based on the weight of the polyolefin, of an organic peroxide coated onto a carrier polymer, the amount of organic peroxide coated onto said carrier polymer being at least 0.2% by weight of the carrier polymer, and (iii) up to 5%, by weight of the polyolefin, of a grafting monomer capable of being grafted onto the polyolefin in the presence of the organic peroxide;

(b) heating the admixture to a temperature above the melting point of both the polyolefin and the carrier polymer under admixing conditions to effect grafting of said grafting monomer onto the polyolefin, said carrier polymer undergoing chain scission in preference to cross-linking in the presence of the organic peroxide at said temperature; and

(c) extruding grafted polyolefin from the extruder.

US 6,331,596 B1

METHOD OF PREPARING CARBAMATE-FUNCTIONAL POLYMERS

Swaminathan Ramesh, Canton, and Marvin L. Green, Brighton, both of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Jun. 28, 1999, Appl. No. 340,632

Int. Cl. C08F *8/30;* **C08G** *85/00*

U.S. Cl. 525—329.9 **21 Claims**

1. A method of preparing a carbamate-functional polymer comprising the steps of:

(a) providing a hydroxy-functional polymer; and

(b) reacting a carbamate compound with said hydroxy-functional polymer in the presence of a transcarbamation catalyst, thereby forming a carbamate-functional polymer, wherein said transcarbamation catalyst is selected from the group consisting of Bi(III) compounds, Zr(IV) compounds, and mixtures thereof.

US 6,331,597 B1

AZIDOSILANE-MODIFIED, MOISTURE-CURABLE POLYOLEFIN POLYMERS, PROCESS FOR MAKING, AND ARTICLES OBTAINED THEREFROM

Ray Eugene Drumright, Midland, Mich.; Thoi Huu Ho, Lake Jackson, Tex., and Robert Henry Terbrueggen, Pasadena, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 9, 1999, Appl. No. 370,309

Int. Cl. C08F *8/34*

U.S. Cl. 525—333.5 **8 Claims**

1. A water-curable silane-grafted polymer comprising the reaction product of:

(A) a first polymer, the first polymer comprising an interpolymer comprising polymer units of at least one ethylene or α-olefin and at least one vinylidene aromatic compound; and

(B) at least one monofunctional azidosilane

wherein the interpolymer comprises:

(a) from about 55 to about 95 mole percent of polymer units derived from at least one ethylene or α-olefin, and

(b) from about 5 to about 45 mole percent of polymer units derived from at least one vinylidene aromatic interpolymer.

US 6,331,598 B1

EMULSION POLYMER HAVING A VESICULATED STRUCTURE AND THE PROCESS FOR PREPARING THE SAME

Jong-Myung Park, Kyunggi-Do; Chang-Ho Choi, Seoul; Jung-Kwon Oh, and Seung-Min Hong, both of Kyunggi-Do, all of Rep. of Korea, assignors to Korea Chemical Co., Ltd., Woolsan-si, Rep. of Korea

Filed Aug. 24, 1999, Appl. No. 379,905

Claims priority, application Rep. of Korea, Aug. 25, 1998, 98-34428

Int. Cl. C08F *2/22;220/06;220/16;220/28;* **C08J** *9/00*

U.S. Cl. 526—87 **20 Claims**

1. A process for preparing an emulsion polymer comprising:

placing a first mixture of monomers in a feed tank B which is connected directly to a reactor;

placing a second mixture of monomers in a feed tank A which is connected to the feed tank B; and

continuously varying the composition ratio of the monomers of feed tanks A and B in the emulsion polymer by varying the rate of feeding of the second mixture of monomers present in tank A into tank B while simultaneously varying the rate of feeding of the first mixture of monomers present in tank B into the reactor, wherein the first and second mixtures of monomers are simultaneously fluxed in therein while stirring.

US 6,331,599 B1

COPOLYMER OF ETHYLENE AND OF AT LEAST ONE ALPHA-OLEFIN AND METHOD FOR OBTAINING SAME

Benoît Koch, Hannut, Belgium, assignor to Solvay Pololefins Europe-Belcium, Brussels, Belgium

PCT No. PCT/EP97/05912, § 371 Date Apr. 22, 1999, § 102(e) Date Apr. 22, 1999, PCT Pub. No. WO98/18834, PCT Pub. Date May 7, 1998

PCT Filed Oct. 16, 1997, Appl. No. 284,859

Claims priority, application Belgium, Oct. 25, 1996, 09600910

Int. Cl. C08F *4/24;* **B01J** *23/26*

U.S. Cl. 526—106 **18 Claims**

1. A copolymer of ethylene and of at least one alpha-olefin obtained by means of a catalytic solid based on chromium oxide, the said copolymer having a melt flow index HLMI, expressed in g/10 min, an amount of alpha-olefin Q, expressed in g of alpha-olefin per kg of copolymer, a standard density SD, expressed in kg/m^3, and dynamic viscosities μ_0 and μ_2 measured at 190° C., respectively at rate gradients of 1 and 100 s^{-1}, corresponding to the relationships $SD \geqq (952.75+5.40\times\log HLMI-0.79\times Q)$, and $\mu_0/\mu_2 \geqq (23.67-6.67\times\log HLMI)$.

US 6,331,600 B1

ELASTOMERIC COPOLYMERS OF ETHYLENE AND PROPYLENE

Maurizio Galimberti, Milan, and Enrico Albizzati, Arona, both of Italy, assignors to Basell Technology Company bv, Hoofddorp, Netherlands

Continuation of application No. 08/587,605, filed on Jan. 3, 1996, now abandoned, which is a continuation of application No. 08/461,410, filed on Jun. 5, 1995, now abandoned, which is a continuation of application No. 08/239,768, filed on May 9, 1994, now abandoned. This application Apr. 22, 1997, Appl. No. 841,473.

Claims priority, application Italy, Jun. 30, 1993, M193A1406

Int. Cl. C08F *210/16;4/64*

U.S. Cl. 526—160 **11 Claims**

1. Copolymers of ethylene with propylene containing from 55 to 70% by weight of ethylene, from 30 to 45% by weight of propylene, the copolymers excluding the presence of units derived from dienes or polyenes, the copolymers displaying the following properties:

(a) crystallinity content, as measured as fusion enthalpy, lower than 15 J/g;

(b) solubility in pentane at 25° C. higher than 95%;

(c) content of propylenic units in the form of triads between 3 and 10% of propylene; at least 70% of the triads displaying an isotactic structure;

(d) product of monomer reactivity ratio r_1r_2 from 0.4 to 0.6 where r_1 is the reactivity ratio of ethylene, and r_2 is the reactivity ratio of propylene;

(e) intrinsic viscosity higher than 3 dl/g; and

(f) tension set, measured at 200%, 20° C. for 1 minute, of less than 15%.

US 6,331,601 B1

SUPPORTED SINGLE-SITE CATALYST AND OLEFIN POLYMERIZATION PROCESS

Gregory G. Hlatky, Morrow, Ohio, assignor to Equistar Chemicals, LP, Houston, Tex.

Division of application No. 09/292,370, filed on Apr. 15, 1999, now Pat. No. 6,040,261. This application Jan. 27, 2000, Appl. No. 492,585.

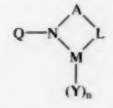
Int. Cl. C08F *4/64*

U.S. Cl. 526—171 **4 Claims**

1. A process which comprises:

(a) reacting an amine-functionalized support of the structure: Q-NH_2 wherein Q is an inorganic solid or polymer support, with a compound of the formula X—A—L, wherein X is a leaving group, A is a linking group, and L is a polymerization-stable pi-bonded ancillary ligand that is covalently bonded to A, to produce a supported ligand of the formula: Q—NH—A—L;

(b) reacting the supported ligand with a transition or lanthanide metal compound to produce a tethered catalyst of the structure:



where M is a Group 3 to 10 transition or lanthanide metal, Y is a ligand selected from the group consisting of halide, alkoxy, siloxy, dialkylamino, C_1–C_{10} alkyl, C_6–C_{15} aryl, C_7–C_{15} alkaryl or aralkyl, and n is the number of Y groups and equals the valence of M minus 2;

(c) polymerizing and olefin in the presence of the tethered catalyst.

US 6,331,602 B1

MONOMER AND A POLYMER OBTAINED THEREFROM

Motoshige Sumino, Saitama, Japan, assignor to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Division of application No. 09/195,237, filed on Nov. 18, 1998, now Pat. No. 6,160,068. This application Sep. 6, 2000, Appl. No. 656,458.

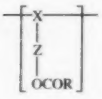
Claims priority, application Japan, Nov. 19, 1997, 9-335055

Int. Cl. C08F *10/00*

U.S. Cl. 526—281 **7 Claims**

1. A polymer, which contains, as a structural unit, a monomer unit shown by the general formula [1a]

[1a]



(wherein X is a cyclic hydrocarbon residue which may have a substituent, Z is a spacer or a direct bond, and R is a substituted alkyl or alkenyl group having one or two protected hydroxyl groups as substituent).

US 6,331,603 B1

NITROGEN CONTAINING ACRYLIC COPOLYMERS

Matthew R. Sivik, Parma, and Charles P. Bryant, Euclid, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Division of application No. 08/810,847, filed on Mar. 4, 1997, now Pat. No. 5,821,313, which is a continuation-in-part of application No. 08/665,655, filed on Jun. 18, 1996, now abandoned, which is a continuation-in-part of application No. 08/492,276, filed on Jun. 19, 1995, now Pat. No. 5,969,068. This application Jul. 16, 1998, Appl. No. 116,367.

Int. Cl. C08F *222/12;226/06*

U.S. Cl. 526—307 **25 Claims**

1. A nitrogen containing copolymer prepared by a process comprising reacting, in the presence of a free radical initiator and in a diluent,

(A) from about 55% to about 99.9% by weight of one or more alkyl acrylate ester monomers containing from 1 to about 24 carbon atoms in the ester alkyl group, wherein at least about 50 mole % of the esters contain at least 6 carbon atoms in the ester alkyl group, and

(B) from about 0. 1% to about 45% by weight of at least one nitrogen containing monomer selected from the group consisting of dialkylaminoalkyl acrylate monomers, dialkylaminoalkyl acrylamide monomers and N-tertiary alkyl acrylamides, provided that the total of (A) and (B) equals 100%, and optionally, in the presence of a chain transfer agent, wherein monomer (A), the free radical initiator, and if used, the chain transfer agent, are first combined to form a mixture, whereupon from about 10% to about 80% of said mixture is mixed with monomer (B);

from about 20% to about 100% of the mixture of monomers (A) and (B) is heated until an exotherm is noted, then while maintaining reaction temperature, first adding the balance, if any, of the mixture of monomers (A) and (B) over about 0.25 hour to about 5 hours followed by addition over 0.25 to about 5 hours of the remaining mixture of monomer (A) and initiator, optionally adding additional initiator, whereupon the reaction is continued to completion.

US 6,331,604 B1

GRAFTED RUBBER-LIKE SILICONE GEL WITH ENHANCED OIL COMPATIBILITY AND ITS SYNTHETIC PROCESS

James Wang, Stony Brook, N.Y., and Thomas J. Hrubec, Elmwood Park, N.J., assignors to Grant Industries, Inc., Elmwood Park, N.J.

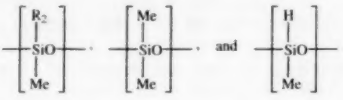
PCT No. PCT/US97/19715, § 371 Date Mar. 31, 1999, § 102(e) Date Mar. 31, 1999, PCT Pub. No. WO98/18849, PCT Pub. Date May 7, 1998

Provisional application No. 60/029,774, filed on Oct. 29, 1996. This PCT application Oct. 29, 1997, Appl. No. 269,631.

Int. Cl. C08G *77/14*

U.S. Cl. 528—29 **15 Claims**

1. A cross-linked polydimethylsiloxane network characterized by the repeating units:



wherein R_2 is selected from the group consisting of C_5–C_{22} alkoxy and C_5–C_{22} alkoxylol and Me is methyl.

US 6,331,605 B1

OLIGOMERIC ORGANOSILANEPOLYSUFANES, THEIR USE IN RUBBER MIXTURES AND FOR PREPARING MOLDED ARTICLES

Hans-Detlef Lunginsland, Köln, and Christoph Batz-Sohn, Hanau, both of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jun. 10, 1999, Appl. No. 329,370

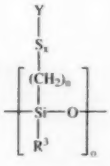
Claims priority, application Germany, Jun. 10, 1998, 198 25 796

Int. Cl. C08G *77/22*

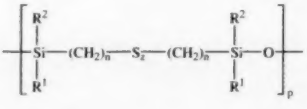
U.S. Cl. 528—30 **19 Claims**

14. Rubber mixtures comprising an oligomeric organosilanepolysulfane containing at least one structural unit selected from the group consisting of structural units A, B and C linked in any linear, branched or cyclic arrangement,

A



B



C

wherein Y=H, CN, $-(CH_2)_nSiRR^1R^1R^2$;

n=1–8,

R, R^1, R^2 and R^3, independently, represent H, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, halogen or a $OSiR^1R^2R^3$ group;

x, as a statistical average, is 1–6,
z, as a statistical average, is 2–6,
n is 1–8, and
o, p and q are each a whole, positive number between 1 and 40 where o+p+g may be ≧2 and <40, with the proviso that at least one structural unit A or B is present,

the rubber mixtures comprising a synthetic rubber, a silica as filler and the oligomeric organosilanepolysulfane, which has been obtained by polymerization of bis-(3-[triethoxysilyl]-propyl)tetrasulfane or by copolymerization of bis-(3-[triethoxysilyl]-propyl)tetrasulfane and propyltriethoxysilane.

US 6,331,606 B1

POLYESTER COMPOSITION AND PROCESS THEREFOR

Yanhui Sun, Wilmington, Del., assignor to E. I. du Pont de Nemours and Comapny, Wilmington, Del.

Filed Dec. 1, 2000, Appl. No. 727,792

Int. Cl. C08G *63/68*

U.S. Cl. 528—295 **28 Claims**

1. A composition comprising repeat units derived from 1,3-propanediol, an organic acid, a polyether diol, and a sulfonated comonomer having the formula of $(R'O(O)C)_2A(R)_zS(O)_2OM$ wherein each R' is independently hydrogen, a C_1 to C_4 alkyl group, or a C_1 to C_4 hydroxyalkyl group; R is a C_1 to C_4 alkyl group; A is an alkylene group, an arylene group, or combinations thereof; z is a number from 0 to 2; M is hydrogen, alkali metal ion, alkaline earth metal ion, quaternary ammonium, an ammonium ion, or combinations of two or more thereof; and said polyether diol is present in said composition in the range of from about 10 to about 80 weight % and the molecular weight of said polyether diol is in the range of from about 200 to about 1500, and has the formula $H—(—O—(CH_2)_a—)_b—OH$ wherein a is 3 to 12 and b is 2 to 25.

US 6,331,607 B1

METHOD FOR PRODUCING GLUCOPROTAMINES

Ralf Bohlander; Sven Jaensch, both of Duesseldorf, and Dirk Springer, Haan, all of Germany, assignors to Cognis Deutschland GmbH, Duesseldorf, Germany

PCT No. PCT/EP98/05774, § 371 Date Jun. 8, 2000, § 102(e) Date Jun. 8, 2000, PCT Pub. No. WO99/15496, PCT Pub. Date Apr. 1, 1999

PCT Filed Sep. 10, 1998, Appl. No. 508,929

Claims priority, application Germany, Sep. 19, 1997, 197 41 356

Int. Cl. C08G *69/08;73/10*

U.S. Cl. 528—312 **21 Claims**

1. A process for producing a glucoprotamine, said process comprising:

(a) providing an N-substituted propylenediamine;

(b) providing a 2-aminoglutaric derivative; and

(c) reacting the N-substituted propylenediamine with the 2-aminoglutaric derivative in the presence of an aminosilicone.

US 6,331,608 B1

PROCESS FOR PRODUCING POLY(ARYLENE SULFIDE)

Fernando C. Vidaurri; Jon F. Geibel; James W. Waterman; Jay M. Chaffin; Aubrey South, Jr., all of Bartlesville, Okla.; Jeffrey S. Fodor, Borger, Tex., and Glenn F. Kile, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 13, 1999, Appl. No. 394,790

Int. Cl. C08G *75/14*

U.S. Cl. 528—388 **20 Claims**

1. A process to recover at least one polar organic compound and at least one modifier compound from a P(AS) reaction mixture, said process comprising the sequential steps of:

1) cooling said P(AS) reaction mixture comprising high molecular weight poly(arylene sulfide), low molecular weight poly(arylene sulfide), cyclic and linear poly(arylene sulfide) oligomers, at least one polar organic compound, at least one modifier compound, an alkali metal halide by-product, and water to a temperature sufficient to solidify said high molecular weight poly(arylene sulfide) to produce a cooled reaction mixture;

2) venting said cooled reaction mixture to remove a majority of the water from said cooled reaction mixture to produce a cooled, dehydrated reaction mixture.

US 6,331,609 B1

PREPARATION OF HUMAN IGF VIA RECOMBINANT DNA TECHNOLOGY

James M. Lee, San Bruno, Calif.; Axel Ullrich, Munich, Germany, and Arjun Singh, Pacifica, Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of application No. 06/506,078, filed on Jun. 20, 1983, now abandoned, which is a continuation-in-part of application No. 06/501,353, filed on Jun. 6, 1983, now abandoned. This application Jun. 5, 1995, Appl. No. 464,361.

Int. Cl. C07K *14/65*

U.S. Cl. 530—324 **1 Claim**

1. A fusion protein comprising the amino acid sequence of mature human IGF-I as shown in FIG. **12** or a natural allelic variant thereof and, at the N-terminus of the mature IGF-I, a bacterial protein followed by an enzymatic proteolysis site linking the bacterial protein and the mature IGF-I.

US 6,331,610 B1

METHOD FOR TREATING AIDS AND HIV INFECTION USING SELECT PEPTIDES FROM THE BETA SUBUNIT OF HUMAN CHORIONIC GONADOTROPIN

Aldar S. Bourinbaiar, New York, N.Y., assignor to Metatron, Inc., Deer Park, N.Y.

Provisional application No. 60/044,937, filed on Apr. 25, 1997, now abandoned. This application Aug. 7, 1997, Appl. No. 908,371.

Int. Cl. A61K *38/00*

U.S. Cl. 530—324 **18 Claims**

1. A method of treating HIV infection in human cells and tissues or inhibiting the spread of human immunodeficiency virus (HIV) to uninfected human cells and tissues comprising administering to a human host an anti-HIV effective amount of a peptide fragment of amino acids 1–50 or 100–145 of SEQ ID NO:1 of beta human chorionic gonadotropin (hCG) or an anti-HIV fragment thereof containing at least four contiguous amino acid units of said amino acids 1–50 or 100–145 for a time and under conditions effective to reduce HIV infection or spread of HIV to uninfected human cells.

US 6,331,611 B1

EXPRESSION AND PURIFICATION OF CLONED HUMAN ALPHA-FETOPROTEIN

Robert A. Murgita, Montreal, Canada, assignor to McGill University, Quebec, Canada

Continuation-in-part of application No. 08/377,317, filed on Jan. 24, 1995, now abandoned, which is a continuation-in-part of application No. 08/133,773, filed on Oct. 8, 1993, now Pat. No. 5,384,250, which is a continuation of application No. 07/767,435, filed on Sep. 27, 1991, now abandoned. This application Jul. 21, 1995, Appl. No. 505,012.

This patent is subject to a terminal disclaimer.

Int. Cl. C07K *14/00*

U.S. Cl. 530—350 **19 Claims**

1. Substantially pure biologically-active recombinant human alpha-fetoprotein which is unfused to additional amino acids,

wherein said recombinant human alpha-fetoprotein comprises an amino acid sequence which is at least 90% homologous to amino acids 1 to 590 shown in FIG. **1** (SEQ ID NO: 5).

US 6,331,612 B1

BONE MORPHOGENIC PROTEIN-16 (BMP-16) COMPOSITIONS

Anthony J. Celeste, Hudson, and Beth L. Murray, Arlington, both of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Division of application No. 08/715,202, filed on Sep. 18, 1996, now Pat. No. 5,965,403. This application Jun. 9, 1999, Appl. No. 328,775.

Int. Cl. C07K *14/51*

U.S. Cl. 530—350 **4 Claims**

1. A purified bone morphogenetic protein-16 (BMP-16) polypeptide comprising the amino acid sequence from amino acid #1 to #110 as set forth in SEQ ID NO: 2.

US 6,331,613 B1

ISOLATED NUCLEIC ACID MOLECULES WHICH ENCODE T CELL INDUCIBLE FACTORS (TIFS), THE PROTEINS ENCODED, AND USES THEREOF

Laure Dumoutier; Jamila Louhed, and Jean-Christophe Renauld, all of Brussels, Belgium, assignors to Ludwig Institue for Cancer Research, New York, Calif.

Continuation-in-part of application No. 09/354,243, filed on Jul. 16, 1999, which is a continuation-in-part of application No. 09/178,973, filed on Oct. 26, 1998, now Pat. No. 6,274,710. This application Oct. 18, 1999, Appl. No. 419,568.

Int. Cl. C07H *21/04;* **C12P** *21/06;* **C12N** *1/20;15/24*

U.S. Cl. 536—23.5 **22 Claims**

1. An isolated nucleic acid molecule, which encodes a T cell derived inducible factor having the amino acid sequence encoded by the nucleotide sequence of SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 24, SEQ ID NO: 25 or SEQ ID NO: 29.

US 6,331,614 B1

HUMAN CDC14A GENE

Alexander K. C. Wong, La Jolla, Calif.; David H. -F. Teng, and Sean V. Tavtigian, both of Salt Lake City, Utah, assignors to Myriad Genetics, Inc., Salt Lake City, Utah

Provisional application No. 60/113,833, filed on Dec. 23, 1998. This application Dec. 22, 1999, Appl. No. 468,872.

Int. Cl. C07H *21/04;21/02;* **C12N** *15/00;15/09;15/63*

U.S. Cl. 536—23.5 **14 Claims**

1. An isolated nucleic acid sequence encoding a CDC14A polypeptide, said polypeptide having the amino acid sequence set forth in Seq ID No: 2.

US 6,331,615 B1

NUCLEIC ACID MOLECULE ENCODING HEAVY OR LIGHT CHAIN OF AN ANTIBODY WHICH SPECIFICALLY RECOGNIZES A PROTEIN SPECIFICALLY RECOGNIZED BY MONOCLONAL ANTIBODY 5C8 (ANTI-CD40 LIGAND)

Seth Lederman, New York; Leonard Chess, Scarsdale, and Michael J. Yellin, Riverdale, all of N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of application No. 08/484,483, filed on Jun. 7, 1995, now Pat. No. 5,993,816, which is a division of application No. 07/792,728, filed on Nov. 15, 1991, now Pat. No. 5,474,771. This application Apr. 7, 1999, Appl. No. 287,843.

Int. Cl. C12N *15/13;15/12;15/00;* **C07H** *21/04*

U.S. Cl. 536—23.53 **12 Claims**

1. An isolated nucleic acid molecule encoding monoclonal antibody 5c8 produced by the hybridoma having ATCC Accession Number HB 10916.

US 6,331,616 B1

NUCLEIC ACIDS OBTAINED FROM THE ENVELOPE CODING REGION OF FELINE IMMUNODEFICIENCY VIRUS MOLECULAR CLONE DESIGNATED JSY3

Wayne Tompkins; Mary Tompkins, and Joo-Sung Yang, all of Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Mar. 5, 1997, Appl. No. 811,682

Int. Cl. C07H *21/04*

U.S. Cl. 536—23.72 **7 Claims**

1. An isolated DNA molecule consisting of a DNA sequence selected from the group consisting of SEQ ID NO:18 and SEQ ID NO: 19.

US 6,331,617 B1

POSITIVELY CHARGED OLIGONUCLEOTIDES AS REGULATORS OF GENE EXPRESSION

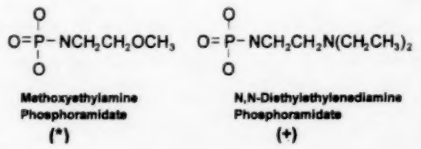
Daniel L. Weeks, and John Dagle, both of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Continuation-in-part of application No. 08/619,301, filed on Mar. 21, 1996, now Pat. No. 5,734,040. This application Mar. 27, 1998, Appl. No. 49,277.

This patent is subject to a terminal disclaimer.

Int. Cl. C07H *21/04;19/00;* **A01N** *43/04*

U.S. Cl. 536—24.5 **31 Claims**



1. A triplex-forming oligonucleotide comprising about 30% to about 100% cationic alkylpolyamine internucleoside linkages.

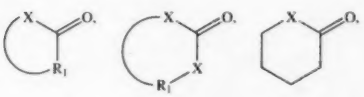
US 6,331,618 B1
COMPOSITIONS OF SOLVENTS AND HIGH CONCENTRATIONS OF NUCLEIC ACID ANALOGS

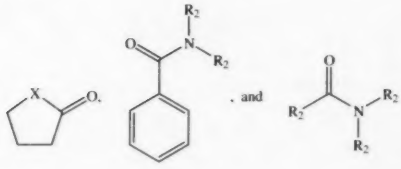
William Bloch, San Mateo; William E. Werner, San Carlos, both of Calif.; Michael Egholm, Wayland, and Rene L. Myers, Framingham, both of Mass., assignors to PE Corporation (NY), Foster City, Calif.

Filed May 13, 1999, Appl. No. 311,079
Int. Cl. C07H *21/00*
U.S. Cl. 536—25.4 **24 Claims**

1. An aqueous comnposition comprising a nucleic acid analog with an uncharged, neutral backbone and about 5% (v/v) to about 95% (v/v) of a polar aprotic solvent, wherein the concentration of the nucleic acid analog is in the range of about 1 μM to about 10 mM and the composition has a pH in the range of about pH 5 to about pH 9; and

wherein the polar aprotic solvent is selected from the group consisting of:

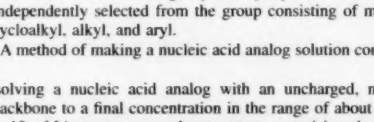


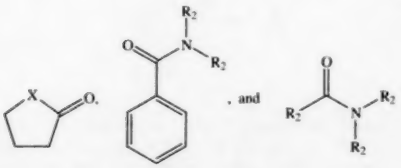


where X is O, NH, or NP_2; R_1 is alkyldiyl; and each R_2 is independently selected from the group consisting of methyl, cycloalkyl, alkyl, and aryl.

14. A method of making a nucleic acid analog solution comprising

dissolving a nucleic acid analog with an uncharged, neutral backbone to a final concentration in the range of about 1 μM to 10 mM in an aqueous solvent system comprising about 5% to 95% (v/v) of a polar aprotic solvent; wherein the polar aprotic solvent is selected from the group consisting of:





where X is O, NH, or NR_2; R_1 is alkyldiyl; and each R_2 is independently selected from the group consisting of methyl, cycloalkyl, alkyl and aryl; and

adjusting the pH to a range of about 5 to about 9.

US 6,331,619 B1
SUPERABSORBENT MATERIAL AND METHOD FOR PRODUCING SAID MATERIAL

Arie Cornelis Besemer, Amerongen, and Jeffrey Wilson Thornton, Hulzen, both of Netherlands, assignors to SCA Hygiene Products Zeist B.V., Zeist, Netherlands

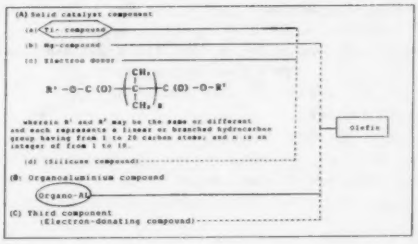
PCT No. PCT/NL97/00708, § 371 Date Jul. 27, 1999, § 102(e) Date Jul. 27, 1999, PCT Pub. No. WO98/27117, PCT Pub. Date Jun. 25, 1998
PCT Filed Dec. 18, 1997, Appl. No. 331,259
Claims priority, application European Pat. Off., Dec. 18, 1996, 96203594; Dec. 18, 1996, 96203595
Int. Cl. C08B *31/18*
U.S. Cl. 536—105 **17 Claims**

1. Superabsorbent polysaccharide derivative obtained by oxidation and crosslinking of a polysaccharide selected from the group consisting of starch, amylose and amylopectin, β-glucans, galactomannans, glucomannans and fructans, hydroxyethyl and hydroxypropyl derivatives thereof, and carboxyalkyl derivatives of starch, amylose, amylopectin, galactomannans and glucomannans, characterized in that at least 0.1 carbinol group per monosaccharide unit of the polysaccharide derivative has been oxidized to a carboxyl group, the total number of carboxyl groups per monosaccharide unit being 0.2–3.0, and the derivative results from reaction with 0.001–0.2 equivalent of crosslinking agent per monosaccharide unit.

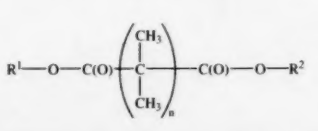
US 6,331,620 B1
SOLID CATALYST COMPONENTS FOR OLEFIN POLYMERIZATION, CATALYSTS FOR OLEFIN POLYMERIZATION AND PROCESS FOR PRODUCING OLEFIN POLYMERS

Yasunori Kadoi; Tsuyoshi Ota; Toshio Isozaki; Kiyokazu Katayama, and Takanori Sadashima, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP98/03646, § 371 Date Feb. 22, 2000, § 102(e) Date Feb. 22, 2000, PCT Pub. No. WO99/10390, PCT Pub. Date Mar. 4, 1999
PCT Filed Aug. 17, 1998, Appl. No. 463,999
Claims priority, application Japan, Aug. 22, 1997, 9-226162
Int. Cl. C08F *2/00*
U.S. Cl. 536—213 **7 Claims**


(A) Solid catalyst component
(a) Ti- compound
(b) Mg-compound
(c) Electron donor
wherein R¹ and R² may be the same or different and each represents a linear or branched hydrocarbon group having from 1 to 20 carbon atoms; and n is an integer of from 1 to 10.
Olefin
(d) (Silicone compound)
(B) Organoaluminium compound
Organo-Al
(C) Third component
(Electron-donating compound)

1. A solid catalyst component for olefin polymerization, comprising titanium, magnesium, and a compound of the following general formula (I) as an electron donor:


(I)

wherein R^1 and R^2may be the same or different and each represents a linear or branched hydrocarbon group having from 1 to 20 carbon atoms; and n is an integer of from 1 to 10.

US 6,331,621 B1

ISOLATED NUCLEIC ACID MOLECULES WHICH ENCODE ACTIVIN-RECEPTOR LIKE KINASES, EXPRESSION VECTORS AND CELLS CONTAINING THESE

Kohei Miyazono; Peter ten Dijke; Petra Franzen; Hidetoshi Yamashita, and Carl-Henrik Heldin, all of Uppsala, Sweden, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Division of application No. 08/436,265, filed as application No. PCT/GB93/02367, filed on Nov. 17, 1993, now abandoned. This application Oct. 3, 2000, Appl. No. 679,187.

Claims priority, application United Kingdom, Nov. 17, 1992, 9224057; Mar. 8, 1993, 9304677; Mar. 8, 1993, 9304680; May 28, 1993, 9311047; Jul. 2, 1993, 9313763; Aug. 3, 1993, 9136099; Oct. 15, 1993, 9321344

This patent is subject to a terminal disclaimer.

Int. Cl. C12N *15/00;* **C07K** *14/00;* **C12P** *21/06*

U.S. Cl. 536—232 **10 Claims**

1. An isolated nucleic acid molecule which encodes a human protein having activin like kinase activity, the complementary sequence of which hybridizes to the nucleotide sequence set forth at SEQ ID NO: 9, at 5×SSC, 0.1% SDS, followed by two 15 minute washes in 0.5×SSC, 0.1% SDS, at 55° C.

US 6,331,622 B1

PROCESSES FOR PREPARATION OF 9, 11-EPOXY STEROIDS AND INTERMEDIATES USEFUL THEREIN

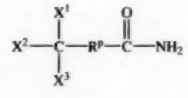
John S. Ng, Chicago, Ill.; Ping T. Wang, Ballwin, Mo.; Julio A. Baez, San Diego, Calif.; Chin Liu, Vernon Hills, Ill.; Dennis K. Anderson, St. Charles; Jon P. Lawson, Glencoe, both of Mo.; Bernhard Erb, Gipf-Oberfrick, Switzerland; Joseph Wieczorek, Cary, Ill.; Gennaro Mucciariello, Rovereto; Fortunato Vanzanella, Napoli, both of Italy; Sastry A. Kunda, Chesterfield, Mo.; Leo J. Letendre, Manchester, Mo.; Mark J. Pozzo, Chesterfield, Mo.; Yuen-Lung L. Sing, St. Louis, Mo., and Edward E. Yonan, Carol Stream, Ill., assignors to G.D. Searle & Co., Chicago, Ill.

Division of application No. 08/763,910, filed on Dec. 11, 1996, now Pat. No. 5,981,744, Provisional application No. 60/008,455, filed on Dec. 11, 1995. This application Feb. 8, 1999, Appl. No. 246,204.

Int. Cl. C07J *21/00;71/00;* **C07D** *321/00*

U.S. Cl. 540—41 **55 Claims**

1. A process for the formation of an epoxy compound comprising contacting a substrate compound having an olefinic double bond with a peroxide compound in the presence of a peroxide activator, said peroxide activator corresponding to the formula



where X^1, X^2, and X^3 are selected from the group consisting of halo, hydrogen, alkyl, haloalkyl, cyano and cyanoalkyl, R^p is selected from the group consisting of arylene and $—(CX^4X^5)_n—$, and n is O or 1, at least one of X^1, X^2, X^3, X^4 and X^5 being halo or perhaloalkyl.

US 6,331,623 B1

PYRROLOTHIAZINE AND PYRROLOTHIAZEPINE COMPOUNDS HAVING SEROTONIN-2 RECEPTOR ANTAGONISTIC AND ALPHA-1-BLOCKING ACTION

Akira Mizuno, Kyoto; Makoto Shibata, Ashikaga; Tomoe Kamei, Takatsuki; Harukazu Fukami, Kyoto, and Norio Inomata, Mino, all of Japan, assignors to Suntory Limited, Osaka, Japan

PCT No. PCT/JP98/05955, § 371 Date Aug. 26, 1999, § 102(e) Date Aug. 26, 1999, PCT Pub. No. WO99/33841, PCT Pub. Date Jul. 8, 1999

PCT Filed Dec. 25, 1998, Appl. No. 367,842

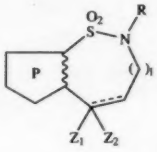
Claims priority, application Japan, Dec. 26, 1999, 9-366757

Int. Cl. C07O *513/34;* **A01K** *31/54*

U.S. Cl. 540—484 **24 Claims**

1. A pyrrolesulfonamide compound or a salt thereof, said pyrrolesulfonamide compound being represented by the following formula (I):

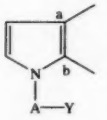
(I)



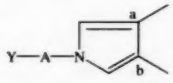
wherein

the ring P represented by

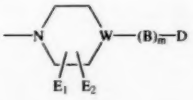
means a pyrrole ring represented by the following structure:



or



in which A represents a substituted or unsubstituted alkylene group, a substituted or unsubstituted alkenylene group or a substituted or unsubstituted alkynylene group; Y represents a group



in which W represents CH, C= or a nitrogen atom; and, when W represents CH, m stands for 0 or 1, B represents a carbonyl group, a sulfonyl group, an alkylene group, an alkenylene group, a group —C(OH)R_1— in which R_1 represents a substituted or unsubstituted aryl group, a group —CHR_2— in which R_2 represents a substituted or unsubstituted aryl group, or a substituted or unsubstituted cyclic or acyclic acetal group; when W represents C=, m stands for 1, B represents a group

in which the double bond is coupled with W and R_3 represents a substituted or unsubstituted aryl group or a substituted or unsubstituted aralkyl group; when W represents a nitrogen atom, m stands for 0 or 1, and B represents a carbonyl group, a sulfonyl group, an alkylene group, an alkenylene group or a group —CHR_4— in which R_4 represents a substituted or unsubstituted aryl group; E_1 and E_2 each independently represents a hydrogen atom or a lower alkyl group; and D represents a substituted or unsubstituted aromatic hydrocarbon group or a substituted or unsubstituted aromatic heterocyclic group;

l represents 0 or 1;

the dashed line indicates the presence or absence of a bond; and, when the bond indicated by the dashed line is present, Z_2 is not present and Z_1, represents a hydrogen atom but, when the bond indicated by the dashed line is absent, Z_1 represents a hydrogen atom and Z_2 represents a hydroxyl group; or Z_1 and Z_2 are combined together to represent an oxygen atom or a group NOR_5 in which R_5 represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group or a substituted or unsubstituted aryl group; and

R represents a hydrogen atom, a linear or branched alkyl group, a cycloalkyl group, a cycloalkyl-alkyl group or a substituted or unsubstituted aralkyl group.

US 6,331,624 B1

PROCESS FOR PREPARING 6-AMINOCAPROAMIDE

Theodore Augur Koch; Alan Martin Allgeier, both of Wilmington; Mark Jay Harper, Lewes, and Sourav Kumar Sengupta, Wilmington, all of Del., assignors to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 5, 2000, Appl. No. 543,766

Int. Cl. C07D *201/02*

U.S. Cl. 540—538 **21 Claims**

1. A process for the production of 6-aminocaproamide comprising reacting 5-cyanovaleramide with hydrogen, and in the presence of a metal catalyst selected from supported metal catalysts, sponge metal catalysts, homogeneous catalysts, and reduced metal oxide, hydroxide, or carbonate catalysts, made by reducing a bulk metal oxide, hydroxide, carbonate or mixtures thereof, wherein if the catalyst is a supported metal catalyst comprising cobalt or nickel, and if the support is calcined, it is calcined before application of the nickel or cobalt.

US 6,331,625 B1

PHOTOCHROMIC SPIROFLUORENOPYRAN COMPOUNDS

Claudia Mann; Udo Weigand, both of Muenchen, and Manfred Melzig, Wessling, all of Germany, assignors to Optische Werke G. Rodenstock, Munich, Germany

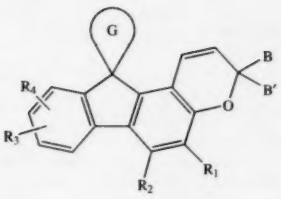
Division of application No. 09/321,746, filed on May 28, 1999, now Pat. No. 6,225,466. This application Apr. 25, 2000, Appl. No. 558,488.

Claims priority, application Germany, May 29, 1998, 198 24 278; Jan. 25, 1999, 199 02 771

Int. Cl. C07D *295/02;307/94;311/96;413/02;453/00*

U.S. Cl. 544—70 **21 Claims**

1. A photochromic eyeglass lens comprising a synthetic resin and at least one photochromic spirofluorenopyran compound corresponding to formula (I):



I

wherein

R_1 is a substituent selected from the group A consisting of C_1 to C_6 alkyl, C_1 to C_6 alkoxy, phenyl, bromine, chlorine and fluorine, and

R_2, R_3 and R_4, independently of one another, are the same or different and each represent a substituent selected from group A' consisting of hydrogen and the substituents of group A;

or

at least one of the substituent pairs (R_1 and R_2) and (R_3 and R_4) independently represents an unsubstituted, monosubstituted or disubstituted benzene or pyridine ring, the substituents of which are selected from group A;

G including the spiro carbon atom, represents a 5-member to 8-member ring to which at least one aromatic or heteroaromatic ring system is annelated, each said aromatic or heteroaromatic ring system being selected from group E consisting of benzene, naphthalene, phenanthrene, pyridine, quinoline, furan, thiophene, pyrrole, benzofuran, benzothiophene, indole and carbazol, and each said aromatic or heteroaromatic ring system being unsubstituted or having one or two substituents selected from the group A, and

B and B', independently of one another, are selected from the following groups a), b), c) and d) wherein

group a) consists of the aryl groups phenyl and naphthyl, which are unsubstituted, monosubstituted, disubstituted or trisubstituted;

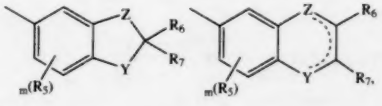
group b) consists of the heterocyclic groups pyridyl, furanyl, benzofuranyl, thienyl, benzothienyl and julolidinyl, which are unsubstituted, monosubstituted or disubstituted;

wherein the substituent or substituents of the aryl or heterocyclic groups in the groups a) and b) are selected from the group F consisting of hydroxy, amino, C_1 to C_6 monoalkylamino, C_1 to C_6 dialkylamino, mono- and diphenylamino unsubstituted, monosubstituted or disubstituted at the phenyl ring, piperidinyl, N-substituted piperazinyl, pyrrolidinyl, imidazolidinyl, pyrazolidinyl, indolinyl, morpholinyl, carbazolyl, unsubstituted, monosubstituted and disubstituted pyrryl, C_1 to C_6 alkyl, C_1 to C_6alkoxy, bromine, chlorine and fluorine,

and

wherein the substituent or substituents on the aromatic and heteroaromatic rings in the group F are selected from the group consisting of C_1 to C_6alkyl, C_1 to C_6 alkoxy, bromine, chlorine and fluorine;

group c) consists of groups having the following structures:



wherein

Y and Z, independently of one another, are selected from the group consisting of O, S, CH, CH_2, NR^N in which R^N is C_1 to C_6 alkyl, C_1 to C_6 acyl, phenyl or hydrogen;

R_5 is selected from the group consisting of hydroxy and the substituents of group A;

m is 0, 1 or 2; and

R_6 and R_7 are independently selected from the group consisting of hydrogen and C_1 to C_6 alkyl; and

group d) consists of B and B' together representing an unsubstituted, monosubstituted or disubstituted fluorene-9-ylide

group or a saturated hydrocarbon group which is C_3 to C_{12} spiro monocyclic, C_7 to C_{12} spiro bicyclic or C_7 to C_{12} spiro tricyclic; the substituents on the fluorene-9-ylide group being selected from the group A.

US 6,331,626 B1
TRIAZINYLAMINOSTILBENE COMPOUNDS

Peter Rohringer, Schönenbuch, Switzerland; André Geoffroy, Habsheim, France; Andreas Burkhard, Basel, Switzerland; Erwin Marti, Basel, Switzerland; Werner Schreiber, Basel, Switzerland, and Josef Zelger, Riehen, Switzerland, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

Division of application No. 09/081,427, filed on May 19, 1998, now Pat. No. 6,153,122. This application Sep. 21, 2000, Appl. No. 666,768.

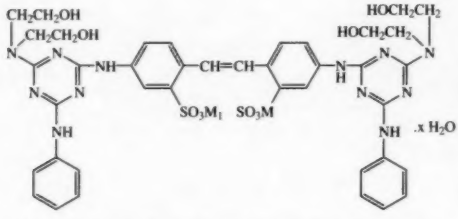
Claims priority, application United Kingdom, May 23, 1997, 9710569.6

Int. Cl. C07D *251/70;* **C09K** *11/06;* **C11D** *3/42*

U.S. Cl. 544—193.2 **20 Claims**

1. A process for the production of the di-sodium salt of the 4,4'-di-triazinylamino-2,2'-di-sulfostilbene compound having the formula:

(I)



in which M and M_1 are sodium and x represents 1 to 6 and possessing the (A) hydrate form characterized by an X-ray diffraction pattern which shows absorptions in the 2Ø-area between 1° and 30° as follows:

4.6 (very strong), 6.1 (very weak), 8.0 (very weak), 10.5 (very weak), 12.1 (medium), 12.7 (strong), 13.8 (medium), 14.4 (very weak), 15.0 (medium), 15.9 (medium), 16.6 (weak), 17.8 (weak), 18.3 (very weak), 18.7 (very weak), 19.0 (very weak), 20.1 (medium), 21.0 (weak), 21.8 (medium), 22.9 (medium), 23.6 (medium), 24.7 (weak), 25.7 (medium), 27.4 (weak), 28.0 (weak), 29.5 (very weak),

by successively reacting cyanuric chloride with 4,4'-diaminostilbene disulphonic acid di-sodium salt, aniline and diethanolamine, adjusting the pH of the mixture to 9.0 to 9.5 with concentrated sodium hydroxide solution and evaporating the mixture to dryness.

US 6,331,627 B1
INTERMEDIATES OF BENZOXAZINONE DERIVATIVES AND PREPARATION THEREOF

Vidya Bhushan Lohray; Braj Bhushan Lohray; Rao Bheema Paraselli; Rajagopalan Ramanujam, and Ranjan Chakrabarti, all of Hyderabad, India, assignors to Reddy's Laboratories Ltd., India

Division of application No. 09/179,141, filed on Oct. 26, 1998, now Pat. No. 6,130,214. This application Jul. 5, 2000, Appl. No. 610,623.

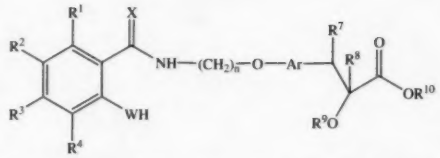
Claims priority, application India, Oct. 27, 1997, 2419/MAS/97

Int. Cl. C07D *279/16;401/00;239/72;* **C07C** *321/00;229/00*

U.S. Cl. 544—284 **6 Claims**

1. An intermediate of formula (IIIm)

(IIIm)



where, X represents O or S; the groups R^1, R^2, R^3 and R^4 may be same or different and represent hydrogen, halogen, hydroxy, cyano, nitro, formyl; or unsubstituted or substituted groups selected from alkyl, cycloalkyl, alkoxy, cycloalkyloxy, aryl, aryloxy, aralkyl, aralkoxy, heterocyclyl, heteroaryl, heteroaryloxy, heteroaralkyl, heteroaralkoxy, acyl, acyloxy, alkoxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, amino, alkylamino which may be mono or dialkylamino group, arylamino, acylamino, aralkylamino, aminoalkyl, hydroxyalkyl, alkoxyalkyl, aryloxyalkyl, aralkoxyalkyl, thioalkyl, alkylthio, alkoxycarbonylamino, aryloxycarbonylamino, aralkoxycarbonylamino, carboxylic acid or its amides, or sulfonic acid or its amides; W represents O; n is an integer ranging from 1–4; Ar represents an unsubstituted or substituted divalent aromatic or heterocyclic group; R^7 represents hydrogen atom, hydroxy, alkoxy, halogen, lower alkyl, or unsubstituted or substituted aralkyl group or forms a bond with R^8; R^8 represents hydrogen atom, hydroxy, alkoxy, halogen, lower alkyl, acyl group or unsubstituted or substituted aralkyl, or R^8 forms a bond together with R^7; R^9 represents hydrogen or unsubstituted or substituted groups selected from alkyl, cycloalkyl, aryl, aralkyl, alkoxyalkyl, aryloxyalkyl, alkoxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, acyl, heterocyclyl, heteroaryl, or heteroaralkyl groups; R^{10} represents hydrogen or unsubstituted or substituted groups selected from alkyl, cycloalkyl, aryl, aralkyl, heterocyclyl, heteroaryl, or heteroaralkyl groups; and the linking group represented by $—(CH_2)_n—O—$ may be attached either through nitrogen atom or carbon atom.

US 6,331,628 B1
PROCESS FOR THE PREPARATION OF BENZONITRILE COMPOUNDS

Yasuo Kondo; Yasuhisa Sugiyama, and Norio Tanaka, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Mar. 28, 2000, Appl. No. 536,680

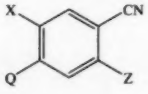
Claims priority, application Japan, Mar. 29, 1999, 11-086230

Int. Cl. C07D *239/54*

U.S. Cl. 544—312 **16 Claims**

1. A process for the preparation of benzonitrile compounds having the formula (1):

(1)

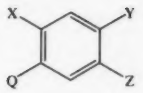


wherein:

X is hydrogen, fluorine or chlorine;

Z is C_1–C_4 alkylsulfonylamino, bis (C_1–C_4 alkylsulfonyl)amino, (C_2–C_5 alkoxycarbonyl)amino, (C_2–C_5 alkylcarbonyl)amino, (optionally substituted benzoyl)amino, (C_2–C_5 alkylcarbonyl) (C_1–C_4 alkylsulfonyl)amino or (optionally substituted benzoyl) (C_1– C_4 alkylsulfonyl)amino; and

Q is 6-trifluoromethyl-2,4(1H, 3H)-pyrimidinedione-3-yl, 1-methyl-6 -trifluoromethyl-2,4(1H, 3H)pyrimidinedione-3-yl or 1-amino-6-trifluoromethyl-2,4(1H, 3H)pyrimidinedione-3-yl group, which process comprises reacting a halogenated benzene compound having the formula (1a):



(1a)

wherein X, Z and Q are as defined above; and Y is fluorine, chlorine, bromine or iodine; provided that if X is fluorine, then Y is chlorine, bromine or iodine; and if X is chlorine; then Y is bromine or iodine; with one or more cyanides selected from the group consisting of potassium cyanide, sodium cyanide and zinc cyanide in the presence of a metallic catalyst, comprising:

iron, cobalt, nickel, ruthenium, rhodium, palladium, iridium, platinum, or osmium.

US 6,331,629 B1

CERTAIN 1-(2-NAPHTHYL) AND 1-(2-AZANAPHTHYL)-4-(1-PHENYLMETHYL)PIPERAZINES; DOPAMINE RECEPTOR SUBTYPE SPECIFIC LIGANDS

William Greenlee, Teaneck; Ashit Gangly, U. Montclair, both of N.J., and Jan W. F. Wasley, Guilford, Conn., assignors to Neurogen Corporation, Branford, Conn.

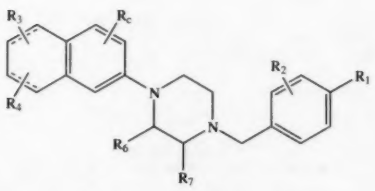
Division of application No. 09/177,956, filed on Oct. 23, 1998, now Pat. No. 6,040,448, Provisional application No. 60/063,149, filed on Oct. 24, 1997. This application Mar. 9, 2000, Appl. No. 522,139.

This patent is subject to a terminal disclaimer.

Int. Cl. C07D *295/096;295/073;295/135;405/10*

U.S. Cl. 544—377 **13 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable addition salt thereof, wherein:

R_c represents hydrogen, halogen or C_1–C_6 alkyl;

R_1 and R_2 independently represent hydrogen, halogen, hydroxy, C_1–C_6 alkyl, C_1–C_4 alkoxy, trifluoromethyl, trifluoromethoxy or SO_2NH_2,

provided that, when R_3 and R_4 are both hydrogen, R_1 and R_2 are not hydrogen simultaneously; and

provided that, R_1 and R_2 cannot both be hydrogen simultaneously, and provided that when R_1 is C_1–C_4 alkyl or halogen, R_2 is halogen, hydroxy, C_2–C_6 alkyl, trifluoromethyl, trifluoromethoxy or SO_2NH_2; or

R_1 and R_2 together represent a C_1–C_2 alkylene dioxy group or a C_1–C_3 alkylene oxy group; and provided that when R_1 and R_2 together represent a C_1–C_2 alkylene dioxy group or a C_1–C_3 alkylene oxy group, at least one of R_3 and R_4 is halogen or C_2–C_6 alkyl;

R_3 and R_4 are the same or different and represent hydrogen, halogen, C_1–C_6 alkyl, C_1–C_4 alkoxy, alkylthio, hydroxy, amino, mono or dialkyl amino where each alkyl is C_1–C_6 alkyl, cyano or trifluoromethyl; with the proviso that when either R_3 or R_4 is methyl, then the other is halogen, C_2–C_6 alkyl, C_1–C_4 alkoxy, alkylthio, hydroxy, amino, mono or dialkyl amino where each alkyl is C_1–C_6 alkyl, cyano or trifluoromethyl; and

R_6 and R_7 independently represent hydrogen or C_1–C_6 alkyl.

US 6,331,630 B1

DIMERIC ARYLISOQUINOLINE ALKALOIDS AND DERIVATIVES THEREOF

Gerhard Bringmann, Würzburg, Germany; Michael R. Boyd, Ijamsville, Md., and Matthias Wenzel, Wesseling, Germany, assignors to The United States of America as represented by the Department of Health and Human Services, Rockville, Md.

Division of application No. 09/001,801, filed on Dec. 31, 1997, now Pat. No. 6,140,339, which is a continuation-in-part of application No. 08/843,582, filed on Apr. 16, 1997, which is a division of application No. 08/195,547, filed on Feb. 14, 1994, now Pat. No. 5,639,761, said application No. 09/001,801 is a continuation-in-part of application No. 08/674,359, filed on Jul. 1, 1996, now Pat. No. 5,789,594, which is a division of application No. 08/279,339, filed on Jul. 22, 1994, now Pat. No. 5,571,919, which is a continuation-in-part of application No. 08/674,362, filed on Jul. 1, 1996, now Pat. No. 5,763,613, which is a division of application No. 08/279,291, filed on Jul. 22, 1994, now Pat. No. 5,552,550, which is a continuation-in-part of application No. 08/721,084, filed on Sep. 24, 1996, now Pat. No. 5,786,482, which is a division of application No. 08/363,684, filed on Dec. 23, 1994, now Pat. No. 5,578,729, which is a continuation of application No. 08/305,211, filed on Sep. 13, 1994, now abandoned, and a continuation-in-part of application No. 08/279,291, filed on Jul. 22, 1994, and a continuation-in-part of application No. 08/279,339, filed on Jul. 22, 1994, now Pat. No. 5,571,919. This application Mar. 16, 2000, Appl. No. 527,002.

Int. Cl. C07D *401/10;401/04;* **A61K** *31/4725;* **A61P** *33/06*

U.S. Cl. 546—140 **11 Claims**

1. A dimeric arylisoquinoline of coupled first and second arylisoquinoline monomers selected from the group consisting of derivatives of dioncophylline D, wherein: (a) the configuration at C-1 or C-3 is instead S; one or more phenolic hydroxyl group(s) is instead an ester, sulfonate ester, or ether group; a methyl ether group is instead a phenolic hydroxyl group; one or more phenolic hydroxyl group(s) is instead an aromatic hydrogen substituent; the secondary amine site is instead an amide, sulfonamide, tertiary amine, alkyl quaternary ammonium salt or corresponding Hoffmann elimination product thereof; at least one CH_3 is instead H; and/or the tetrahydroisoquinoline is instead a dihydroisoquinoline; and (b) a substituent at C-4 is azido, alkoxy, aryloxy, glycosyloxy or oxo; or any combination of the foregoing.

US 6,331,631 B1

PREPARATION OF 1-BUTYL-4-PIPERIDINYLMETHYLAMINE

Michael Fedouloff, Acton; David William Guest, Harlow, and Gillian Elizabeth Smith, Bishops Stortford, all of United Kingdom, assignors to SmithKline Corporation p.l.c., Brentford, United Kingdom

Continuation of application No. 09/254,513, filed as application No. PCT/EP97/05167, filed on Sep. 9, 1997. This application Aug. 22, 2000, Appl. No. 643,644.

Claims priority, application United Kingdom, Sep. 11, 1996, 9618967

Int. Cl. C07D *211/26;498/04*

U.S. Cl. 546—201 **5 Claims**

1. A process for the preparation of 1-butyl-4-piperidinylmethylamine, which process comprises:

i) the reaction of 4-piperidinecarboxamide and 1-bromobutane to give the N-butyl derivative of 4-piperidinecarboxamide followed by

ii) reduction with $LiAlH_4$, characterised in that the reactions i) and ii) are carried out in toluene as solvent.

US 6,331,632 B1

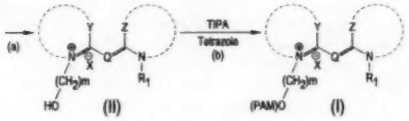
CYANINE DYE PHOSPHORAMIDITES

M. Parameswara Reedy; Firdous Farooqui, both of Brea, and Maged A. Michael, Placentia, all of Calif., assignors to Beckman Coulter, Inc., Fullerton, Calif.

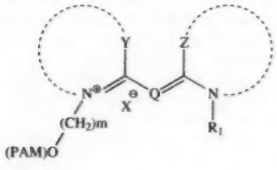
Filed Nov. 9, 2000, Appl. No. 710,575

Int. Cl. C07D *277/60;417/00;513/04;513/14;513/22*

U.S. Cl. 548—148 **43 Claims**



1. A dye phosphoramidite having a formula:



wherein:

each dotted line represents carbon atoms necessary to form a fused substituted or unsubstituted aromatic ring or rings;

m is an integer from 1 to 18;

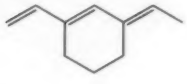
Y and Z are independently selected from the group consisting of S, O, N, CH_2 and $C(CH_3)_2$;

R_1 is an alkyl;

(PAM) is a phosphoramidite group;

X^{63} is a negative ion; and

Q is



US 6,331,633 B1

HETEROCYCLIC ANALOGS OF DIPHENYLETHYLENE COMPOUNDS

Partha Neogi; Bishwajit Nag, both of Fremont; Satyanarayana Medicherla, Sunnyvale, and Debendranath Dey, Union City, all of Calif., assignors to Calyx Therapeutics Inc., Hayward, Calif.

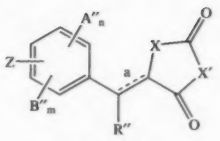
Continuation-in-part of application No. 09/074,925, filed on May 8, 1998, now Pat. No. 6,245,814. This application Apr. 6, 1999, Appl. No. 287,237.

Int. Cl. H61K *31/425*

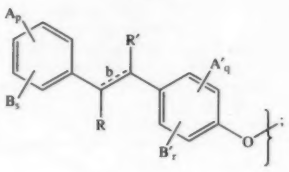
U.S. Cl. 548—183 **8 Claims**

1. A compound of formula I:

(I)



wherein Z is



n, m, q and r are independently integers from zero to 4; p and s are independently integers from zero to 5; a and b are bonds which may be independently single or double bonds;

R, R' and R" are independently H, C_1–C_{20} linear or branched alkyl, C_2–C_{20} linear or branched alkenyl, —CO_2H, —CO_2R''', —NH_2, —NHR'", —NR_2''', —OH, —OR'", halo, substituted C_1–C_{20} linear or branched alkyl or substituted C_2–C_{20} linear or branched alkenyl, wherein R'" is C_1–C_{20} linear or branched alkyl or linear or branched alkenyl,

A, A' and A" are independently H, C_1–C_{20} acylamino; C_1–C_{20} acyloxy; C_1–C_{20} alkanoyl; C_1–C_{20} alkoxycarbonyl; C_1–C_{20} alkoxy; C_1–C_{20} alkylamino; C_1–C_{20} alkylcarboxylamino; carboxyl, cyano; halo; hydroxy;

B, B' and B" are independently H; C_1–C_{20} acylamino; C_1–C_{20} acyloxy; C_1–C_{20} alkanoyl; C_1–C_{20} alkenoyl; C_1–C_{20} alkoxycarbonyl; C_1–C_{20} alkoxy; C_1–C_{20} alkylamino; C_1–C_{20} alkylcarboxylamino; aroyl, aralkanoyl; carboxyl, cyano; halo; hydroxy; and

X, X' are independently —NH, —NR'", O or S.

US 6,331,634 B1

PROCESS FOR PREPARING 2-ALKYL-3-AMINOTHIOPHENE DERIVATIVE AND 3-AMINOTHIOPHENE DERIVATIVE

Hiroyuki Katsuta; Seiichi Ishii; Kanji Tomiya, and Kenji Kodaka, all of Chiba-ken, Japan, assignors to Mitsui Chemicals, Inc., Japan

Division of application No. 09/524,007, filed on Mar. 13, 2000, now Pat. No. 6,239,282. This application Oct. 24, 2000, Appl. No. 694,837.

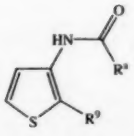
Claims priority, application Japan, Mar. 16, 1999, 11-69387

Int. Cl. C07D *333/36;333/40;409/12*

U.S. Cl. 548—200 **5 Claims**

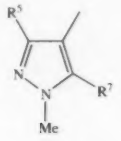
1. A 3-aminothiophene derivative represented by the formula (6a):

(6a)

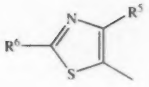


wherein, R^9 represents a hydrogen atom, carboxyl group or alkoxycarbonyl group having 1 to 6 carbon atoms and R^{10} represents a group represented by any of the following (A1) to (A12):

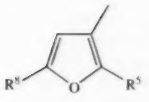
(A1)



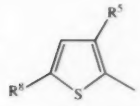
(A2)



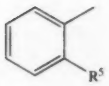
(A3)



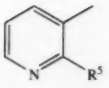
(A4)



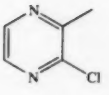
(A5)



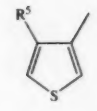
(A6)



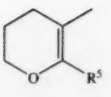
(A7)



(A8)

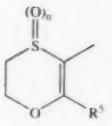


(A9)

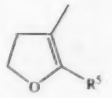


-continued

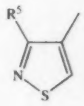
(A10)



(A11)



(A12)



wherein, R^5 represents a trifluoromethyl group, difluoromethyl group, methyl group, ethyl group or halogen atom, R^6 represents a hydrogen atom, methyl group, trifluoromethyl group, halogen atom, methoxy group or amino group, R^7 represents a hydrogen atom, halogen atom, methyl group or methoxy group, R^8 represents a hydrogen atom, methyl group, ethyl group or halogen atom, and n represents an integer from 0 to 2, and herein, in the case of (A9), (A10) or (A11), R^5 is not a halogen atom.

US 6,331,635 B1

TAXOIDS, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Hervé Bouchard, Ivry-sur-Seine; Jean-Dominique Bourzat, Vincennes, and Alain Commerçon, Vitry-sur-Seine, all of France, assignors to Aventis Pharma S.A., Antony, France

Continuation of application No. 08/622,011, filed on Mar. 26, 1996, now Pat. No. 5,847,170. This application Apr. 28, 1998, Appl. No. 66,929.

Claims priority, application France, Mar. 27, 1995, 95 03545; Dec. 22, 1995, 95 15381

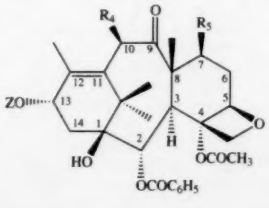
This patent is subject to a terminal disclaimer.

Int. Cl. C07D *263/06;305/14*

U.S. Cl. 548—215 **25 Claims**

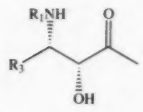
1. A taxoid of the formula (I):

(I)



in which

Z represents a hydrogen atom or a radical of formula (II):



(II)

in which:

R_1 represents a benzoyl radical optionally substituted with one or more identical or different atoms or radicals selected from halogen atoms, alkyl radicals containing 1 to 4 carbon atoms, alkoxy radicals containing 1 to 4 carbon atoms, and trifluoromethyl radicals,

a thenoyl radical,

a furoyl radical, or

a radical R_2—O—CO— in which R_2 represents:

an alkyl radical containing 1 to 8 carbon atoms, an alkenyl radical containing 2 to 8 carbon atoms, an alkynyl radical containing 3 to 8 carbon atoms, a cycloalkyl radical containing 3 to 6 carbon atoms, a cycloalkenyl radical containing 4 to 6 carbon atoms or a bicycloalkyl radical containing 7 to 10 carbon atoms, these radicals being optionally substituted with one or more substituents selected from halogen atoms; hydroxyl radicals; alkoxy radicals containing 1 to 4 carbon atoms; dialkylamino radicals in which each alkyl portion contains 1 to 4 carbon atoms; piperidino radicals; morpholino radicals; 1-piperazinyl radicals optionally substituted at position 4 with an alkyl radical containing 1 to 4 carbon atoms or with a phenylalkyl radical in which the alkyl portion contains 1 to 4 carbon atoms; cycloalkyl radicals containing 3 to 6 carbon atoms; cycloalkenyl radicals containing 4 to 6 carbon atoms; phenyl radicals optionally substituted with one or more atoms or radicals selected from halogen atoms, alkyl radicals containing 1 to 4 carbon atoms and alkoxy radicals containing 1 to 4 carbon atoms; cyano radicals; carboxyl radicals; and alkoxycarbonyl radicals in which the alkyl portion contains 1 to 4 carbon atoms,

a phenyl or α- or β-naphthyl radical optionally substituted with one or more atoms or radicals selected from halogen atoms; alkyl radicals containing 1 to 4 carbon atoms; and alkoxy radicals containing 1 to 4 carbon atoms,

a 5-membered aromatic heterocyclic radical, or

a saturated heterocyclic radical containing 4 to 6 carbon atoms, optionally substituted with one or more alkyl radicals containing 1 to 4 carbon atoms,

R_3 represents an unbranched or branched alkyl radical containing 1 to 8 carbon atoms, an unbranched or branched alkenyl radical containing 2 to 8 carbon atoms, an unbranched or branched alkynyl radical containing 2 to 8 carbon atoms, a cycloalkyl radical containing 3 to 6 carbon atoms, a phenyl on α- or β-naphthyl radical optionally substituted with one or more identical or different atoms or radicals selected from halogen atoms, alkyl, alkenyl, alkynyl, aryl, aralkyl, alkoxy, alkylthio, aryloxy, arylthio, hydroxyl, hydroxyalkyl, mercapto, formyl, acyl, acylamino, aroylamino, alkoxycarbonylamino, amino, alkylamino, dialkylamino, carboxyl, alkoxycarbonyl, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, cyano, nitro and trifluoromethyl radicals, or

a 5-membered aromatic heterocyclic containing one or more identical or different hetero atoms selected from nitrogen, oxygen and sulphur atoms and optionally substituted with one or more identical or different substituents selected from halogen atoms, alkyl, aryl, amino, alkylamino, dialkylamino, alkoxycarbonylamino, acyl, arylcarbonyl, cyano, carboxyl, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl and alkoxycarbonyl radicals,

with the proviso that, in the substituents of the phenyl, α- or β-naphthyl and aromatic heterocyclic radicals in the definitions of R_2 and R_3, the alkyl radicals and the alkyl portions of the other radicals contain 1 to 4 carbon atoms, and the alkenyl and alkynyl radicals contain 2 to 8 carbon atoms, and the aryl radicals are phenyl or α- or β-naphthyl radicals,

R_4 represents an alkoxy radical containing 1 to 6 carbon atoms in an unbranched or branched chain, and

R_5 represents an alkoxy radical containing 1 to 6 carbon atoms in an unbranched or branched chain.

12. 4α-Acetoxy-2α-benzoyloxy-5β,20-epoxy-1β-hydroxy-7β,10β-bis(methylthiomethoxy)-9-oxo-11-taxen-13α-yl(2R,4S,5R)-3-tert-butoxycarbonyl-2-(4-methoxyphenyl)-4-phenyl-1,3-oxazolidine-5-carboxylate.

US 6,331,636 B1

THERAPEUTICALLY USEFUL 2-AMINOTETRALIN DERIVATIVES

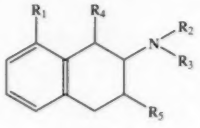
Arthur G. Romero, and William H. Darlington, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of application No. PCT/US91/06863, filed on Sep. 26, 1991, which is a continuation of application No. 07/596,923, filed on Oct. 15, 1990, now abandoned, which is a continuation-in-part of application No. 07/360,190, filed on May 31, 1989, now abandoned, application No. 07/850,136, which is a continuation-in-part of application No. 07/768,915, filed as application No. PCT/US90/02726, filed on May 22, 1990, now abandoned, which is a continuation of application No. 07/360,190, filed on May 31, 1989, now abandoned. This application Mar. 12, 1992, Appl. No. 850,136.

Int. Cl. C07D *263/30;261/02;207/30*

U.S. Cl. 548—235 **6 Claims**

1. A compound having the formula



wherein,

R_1 is from the group —(CO)het and het wherein het is a five atom heterocyclic aromatic ring containing nitrogen, carbon, or optionally containing an additional heteroatom oxygen;

R_2 and R_3 is independently selected from

(a) hydrogen

(b) C_{1-8} alkyl

(c) C_{2-8} alkenyl

(d) C_{2-8} alkynyl

(e) $(CH_2)_m$—C_{3-8} cycloalkyl

(f) $(CH_2)_m$—C_{3-8}cycloalkenyl

(g) $(C_2)_m$-aryl

(h) trimethylsilylmethyl

(i) allyl

R_4 and R_5 are independently

(a) hydrogen

(b) C_{1-8} alkyl

(c) C_{2-8} alkenyl

(d) C_{2-8} alkynyl

(e) $(CH_2)_m$—C_{3-8}cycloalkyl

(f) $(CH_2)_m$—C_{3-8}cycloalkenyl

(g) $(CH_2)_m$-aryl

(h) $(CH_2)_m$—CO_2R_6

(i) $(CH_2)_m$—OR_6

wherein,

R_6 is hydrogen, C_{1-4} alkyl or aryl,

m is 0–4,

or a pharmaceutically acceptable addition salt thereof.

US 6,331,637 B1

N-ALKYL, N-ALKENYL, N-ALKYNYL, N-ARYL AND N-FUSED BICYCLO OR TRICYCLO THIENYL-, FURYL-,AND PYRROLYL-SULFONAMIDES AND DERIVATIVES THEREOF THAT MODULATE THE ACTIVITY OF ENDOTHELIN

Ming Fai Chan, San Diego, Calif.; Chengde Wu, Houston; Bore Gowda Raju, Sugar Land, both of Tex.; Timothy Kogan, Sugar Land, Tex.; Adam Kois, San Diego, Calif.; Erik Joel Verner, Foster City, Calif.; Rosario Silvestre Castillo; Venkatachalapathi Yalamoori, both of San Diego, Calif., and Vitukudi Narayanaiyengar Balaji, Encinitas, Calif., assignors to Texas Biotechnology Corporation, Houston, Tex.

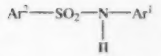
Continuation of application No. 08/721,183, filed on Sep. 27, 1996, now Pat. No. 5,962,490, which is a continuation-in-part of application No. PCT/US96/04759, filed on Apr. 4, 1996, and a continuation-in-part of application No. 08/477,223, filed on Jun. 6, 1995, now Pat. No. 5,594,021, and a continuation-in-part of application No. 08/417,075, filed on Apr. 4, 1995, now abandoned, and a continuation-in-part of application No. 08/247,072, filed on May 20, 1994, now Pat. No. 5,571,821, and a continuation-in-part of application No. 08/222,287, filed on Apr. 5, 1994, now Pat. No. 5,591,761, which is a continuation-in-part of application No. 08/142,552, filed on Oct. 21, 1993, now Pat. No. 5,514,691, and a continuation-in-part of application No. 08/142,559, filed on Oct. 21, 1993, now Pat. No. 5,464,853, and a continuation-in-part of application No. 08/142,631, filed on Oct. 21, 1993, now abandoned, said application No. PCT/US96/04759 is a continuation-in-part of application No. 08/477,223, which is a continuation-in-part of application No. 08/417,075, said application No. 08/477,223 and a continuation-in-part of application No. 08/416,199, filed on Apr. 4, 1995. This application Mar. 22, 1999, Appl. No. 274,280.

This patent is subject to a terminal disclaimer.

Int. Cl. C07D *261/10;* **A61K** *31/422;31/423*

U.S. Cl. 548—241 **60 Claims**

1. A sulfonamide compound of formula (I):

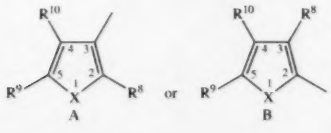


(I)

wherein:

Ar^1 is a substituted or unsubstituted group, having from 1 to 30 carbon atoms, selected from the group consisting of alkyl, alkenyl and alkynyl groups, which are straight or branched chains or have cyclic portions; aryl groups; and fused bicyclic or tricyclic rings; and

Ar^2 has formula IV:



(IV)

A B

in which X is S, O or NR^{11} in which R^{11} is hydrogen or has up to about 30 carbon atoms and is selected from alkyl, alkenyl, alkynyl, aryl, alkylaryl, heterocyclyl, aralkyl, aralkoxy, cycloalkyl, cycloalkenyl, cycloalkynyl, $C(O)R^{15}$ and $S(O)_nR^{15}$ in which n is 0–2; R^{15} is hydrogen, alkyl, alkenyl, alkynyl, aryl, alkylaryl, heterocyclyl, aralkyl, aralkoxy, cycloalkyl, cycloalkenyl or cycloalkynyl; R^{11} and R^{15} are unsubstituted or are substituted with one or more substituents each selected independently from Z,

Z is hydrogen, halide, pseudohalide, alkyl, alkoxy, alkenyl, alkenyloxy, alkynyl, aryl, aryloxy, heteroaryl, heteroaryloxy, a D, L or racemic amino acid, a primary and secondary amide, an O-glycoside, hexose, ribose, alkylaryl, alkylheteroaryl, heterocyclyl, aralkyl, aralkoxy, cycloalkyl, cycloalkenyl, cycloalkynyl, OH, CN, $C(O)R^{16}$, CO_2R^{16}, SH, $S(O)_nR^{16}$ in which n is 0–2, NHOH, $NR^{12}R^{16}$, NO_2, N_3, OR^{16}, $R^{12}NCOR^{16}$, $CONR^{12}R^{16}$, a sulfonyl chloride, $(CH_2)_xS(O)_2NHR^{50}$, alkylaryl, alkylheteroaryl, $—(CH_2)_xC(O)NHR^{50}$, $—(CH_2)_xOH$ or $—(CH_2)_xCOOH$;

x is 0 to 6;

R^{16} is hydrogen, alkyl, alkenyl, alkynyl, aryl, alkylaryl, heterocyclyl, aralkyl, aralkoxy, cycloalkyl, cycloalkenyl, cycloalkynyl, a sulfonyl chloride, $S(O)_2NHR^{50}$, alkylaryl, alkylheteroaryl, $—C(O)NHR^{50}$ or $—(CH_2)_xOH$;

R^{50} is H, alkyl, lower alkyl or lower alkoxy;

R^{12}, which is selected independently from R^{11} and Z, is selected from hydrogen, alkyl, alkenyl, alkynyl, aryl, alkylaryl, heterocyclyl, aralkyl, aralkoxy, cycloalkyl, cycloalkenyl, cycloalkynyl, $C(O)R^{17}$ and $S(O)_nR^{17}$ in which n is 0–2; and R^{17} is hydrogen, alkyl, alkenyl, alkynyl, aryl, alkylaryl, heterocyclyl, aralkyl, aralkoxy, cycloalkyl, cycloalkenyl or cycloalkynyl; each of R^{11}, R^{12}, R^{15} and R^{16} are unsubstituted or substituted with the any of the groups set forth for Z; and

R^8, R^9 and R^{10} are each independently selected as follows from (i) or (ii):

(i) R^8, R^9 and R^{10}, which each is hydrogen or has up to about 50 carbon atoms are each independently selected from halide, pseudohalide, alkyl, alkoxy, alkenyl, alkynyl, aryl, aryloxy, heterocyclyl, aralkyl, aralkoxy, cycloalkyl, cycloalkenyl, cycloalkynyl, OH, CN, $C(O)R^{18}$, acetoxy-, $(CH=CH)—$, CO_2R^{18}, SH, $(CH_2)_xC(O)(CH_2)_nR^{18}$, $(CH_2)_x(CH=CH)_xCH_2)_nR^{18}$, $(CH_2)_xC(O)CH=CH)_x(CH_2)_nR^{18}$, $(CH_2)_x(CH=CH)_xC(O)(CH_2)_nR^{18}$, $(CH_2)_xNH(CH=CH)_x(CH_2)_nR^{18}$, $(CH_2)_x(CH=CH)_xNH(CH_2)_nR^{18}$, $(CH_2)_xC(O)NH(CH_2)_nR^{18}$, $C(O)(CH_2)_xNH(CH_2)_nR^{18}$, $(CH_2)_xNH(CH_2)_nR^{18}$, $(CH_2)_nR^{18}$, $S(O)_mR^{18}$, $—(CH_2)_xC(O)$-W-aryl, $—(CH_2)_xC(O)$-W-heteroaryl, $—(CH_2)_xN(H)$-W-aryl, $—(CH_2)_xN(H)$-W-heteroaryl, HNOH, $NR^{18}R^{19}$, NO_2, N_3, OR^{18}, $R^{19}NCOR^{18}$ and $CONR^{19}R^{18}$, in which:

R^{19} is selected from hydrogen, alkyl, alkenyl, alkynyl, aryl, alkylaryl, alkoxy, aryloxy, heterocyclyl, aralkyl, aralkoxy, cycloalkyl, cycloalkenyl, cycloalkynyl, $C(O)R^{20}$ and $S(O)_nR^{20}$ in which n is 0–2; and R^{18} and R^{20} are independently selected from hydrogen, alkyl, alkenyl, alkynyl, aryl, heteroaryl, alkylaryl, heterocyclyl, alkoxy, aryloxy, aralkyl, aralkoxy, cycloalkyl, cycloalkenyl and cycloalkynyl;

aryl is a single or two or three fused rings that has 5 to 7 members in the ring that is unsubstituted or substituted with Z, at one or more positions, each substituent selected independently;

heteroaryl a single or two or three fused rings that has 5 to 7 members in each ring, and one to two heteroatoms in each ring, and is unsubstituted or substituted with Z at one or more positions, each substituent selected independently;

W is $=C(CH_2)_x(halo)2$, $=N(H)$, $=C(CH2)_xCOOH$, $=N(lower\ alkyl)$, $=C(O)$, lower alkyl, alkyl which is straight or branched having 1 to 6 carbons, $=C(lower\ alkyl)_2$, $=CH_2$, $=NH$, $=NCH_3$, $=NCH_2CH_3$, $=C(CH_3)_2$ or CF_2; m is 0–2, s, n and r are each independently 0 to 6; and any of the groups set forth for R^8, R^9 and R^{10} are unsubstituted or substituted with Z, which is hydrogen, halide, pseudohalide, alkyl, alkoxy, alkenyl, alkynyl, aryl, aryloxy, heterocyclyl, aralkyl, aralkoxy, cycloalkyl, cycloalkenyl, cycloalkynyl, OH, CN, $C(O)R^{21}$, CO_2R^{21}, SH, $S(O)_nR^{21}$ in which n is 0–2, NHOH, $NR^{22}R^{21}$, NO_2, N_3, OR^{21}, $R^{22}NCOR^{21}$ or $CONR^{22}R^{21}$; R^{22} is selected from hydrogen, alkyl, alkenyl, alkynyl, aryl, alkylaryl, heterocyclyl, aralkyl, alkoxy, aralkoxy, cycloalkyl, cycloalkenyl, cycloalkynyl, $C(O)R^{23}$ and $S(O)_nR^{23}$ in which n is 0–2; and R^{21} and R^{23} are independently selected from hydrogen, alkyl, alkenyl, alkynyl, aryl, alkylaryl, heterocyclyl, aralkyl, aralkoxy, cycloalkyl, cycloalkenyl and cycloalkynyl, with the proviso that if R^8 is $NR^{18}R^{19}$, OR^{18}, $R^{19}NCOR^{18}$, $CONR^{19}R^{18}$, CO_2R^{18}, $(CH_2)_xNH(CH=CH)_x(CH_2)_nR^{18}$, $(CH_2)_x(CH=CH)_xNH(CH_2)_nR^{18}$, $(CH_2)_xC(O)NH(CH_2)_nR^{18}$, $C(O)(CH_2)_xNH(CH_2)_nR^{18}$, $(CH_2)_xNH(CH_2)_nR^{18}$ or $(CH_2)_xR^{18}$

and R^{18} is an aryl group having 5 or 6 members, then the aryl group has at least two substituents, or

(ii) any two of R^8, R^9 and R^{10} with the carbon to which each is attached form an aryl, aromatic ring, heteroaromatic ring, carbocyclic or heterocyclic ring, which is saturated or unsaturated, having from 3 to about 16 members and which is substituted with one or more substituents, each substituent is independently selected from Z; the other of R^8, R^9 and R^{10} is selected as in (i); and the heteroatoms are NR^{11}, O, or S, with the proviso that Ar^2 is not 5-halo-3-loweralkylbenzo[b]thienyl, 5-halo-3-loweralkylbenzo[b]furyl or 5-halo-3-loweralkylbenzo[b]pyrrolyl.

US 6,331,638 B1

PROCESS FOR THE PREPARATION OF 1,8-DISUBSTITUTED-1,3,4,9-TETRAHYDROPYRANO (3,4-B)-INDOLE-1-ACETIC ACID ESTERS

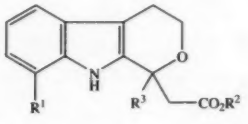
B. Vijay Raghavan, New Delhi; K. V. Ramana, Gurgaon; Brij Khera, New Delhi, and Naresh Kumar, Gurgaon, all of India, assignors to Ranbaxy Laboratories Limited, New Delhi, India

Filed Oct. 4, 1999, Appl. No. 412,455

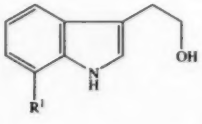
Int. Cl. C07D *491/052*

U.S. Cl. 548—432 **18 Claims**

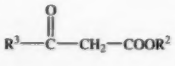
1. A process for the preparation of the ester of 1,8-disubstituted 1,3,4,9-tetrahydropyrano(3,4-b)-indole-1-acetic acid of Formula I:



wherein R_1 is selected from the group consisting of hydrogen, lower alkyl and lower alkenyl, R_2 is selected from the group consisting of lower alkyl and aralkyl, R_3 is selected from the group consisting of lower alkyl, lower alkenyl, lower cyclohexyl, phenyl and benzyl, said process comprising reacting 7-alkyltryptophol of Formula II:



with a β-Ketoester of Formula III:



in a hydroxylic solvent, comprising at least one alkanol system having 1–4 carbon atoms, containing hydrogen chloride gas, and subsequently recovering the ester of Formula I.

US 6,331,639 B2

PROCESS FOR PREPARING 2-ALKYL-3-AMINOTHIOPHENE DERIVATIVE AND 3-AMINOTHIOPHENE DERIVATIVE

Hiroyuki Katsuta; Seiichi Ishii; Kanji Tomiya, and Kenji Kodaka, all of Chiba-ken, Japan, assignors to Mitsui Chemicals, Inc., Japan

Division of application No. 09/524,007, filed on Mar. 13, 2000, now Pat. No. 6,239,282. This application Feb. 20, 2001, Appl. No. 785,320.

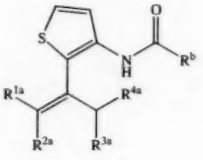
Claims priority, application Japan, Mar. 16, 1999, 11-69387

Int. Cl. C07D *33/36*

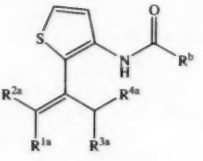
U.S. Cl. 549—69 **6 Claims**

1. A mixture of 2-alkenyl-3-aminothiophene derivatives containing compounds represented by the formulae (4a)', (4b)', (4c)' and (4d)' respectively:

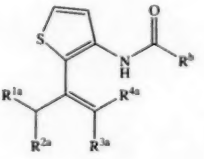
(4a)'



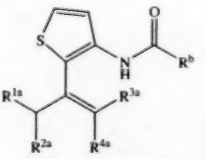
(4b)'



(4c)'



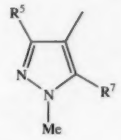
(4d)'



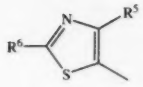
wherein, R^b represents a hydrogen atom, alkyl group or alkoxy group which may be substituted, aromatic or non-aromatic hydrocarbon ring which may be substituted or aromatic or non-aromatic heterocyclic ring which may be substituted, and each of R^{1a}, R^{2a}, R^{3a} and R^{4a} independently represents a hydrogen atom, straight or branched alkyl group having 1 to 12 carbon atoms or straight or branched alkenyl group having 1 to 12 carbon atoms, and R^{1a} and R^{2a}, R^{3a} and R^{4a}, R^{1a} and R^{3a}, R^{1a} and R^{4a}, $R^{2a}$and R^{3a} or R^{2a} and R^{4a} may together form a cycloalkyl group or cycloalkenyl group, excepting the case in which R^b represents a group represented by any of the following (A1) to (A12):

-continued

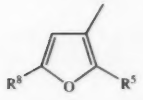
(A1)



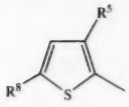
(A2)



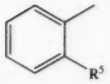
(A3)



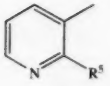
(A4)



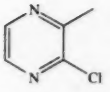
(A5)



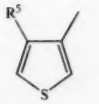
(A6)



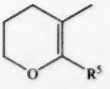
(A7)



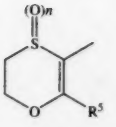
(A8)



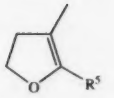
(A9)



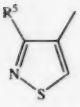
(A10)



(A11)



(A12)



wherein, R^5represents a trifluoromethyl group, difluoromethyl group, methyl group, ethyl group or halogen atom, R^6 represent a hydrogen atom, methyl group, trifluoromethyl group, halogen atom, methoxy group or amino group, R^7 represents a hydrogen atom, halogen atom, methyl group or methoxy group, R^8 represents a hydrogen atom, methyl group, ethyl group or halogen atom, and n represents an integer from 0 to 2, and herein, in the case of (A9), (A10) or (A11), R^5 is not a halogen atom, and the case in which R^b represents a tert-butoxy group and R^{1a}, R^{2a}, R^{3a} and R^{4a} all represent a hydrogen atom being excluded.

US 6,331,640 B1

DIAMINOPROPIONIC ACID DERIVATIVES

Nader Fotouhi, Chatham; Paul Gillespie, Westfield; Robert William Guthrie, Saddle Brook; Sherrie Lynn Pietranico-Cole, Nutley, and Weiya Yun, Warren, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

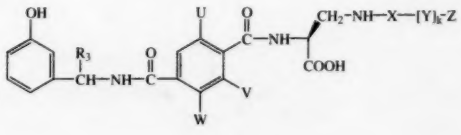
Provisional application No. 60/104,120, filed on Oct. 13, 1998. This application Sep. 29, 1999, Appl. No. 407,534.

Int. Cl. A61K *31/166;31/33;31/381;* **C07D** *333/38;* **C07C** *235/52;233/83*

U.S. Cl. 549—72 **32 Claims**

1. A compound of formula 1h

1h



wherein

U, V, and W are independently selected from the group consisting of halogen, hydrogen and methyl, provided U and V are not both hydrogen;

X is carbonyl or sulfonyl;

Y is methylene;

R_3 is hydrogen or lower alkyl;

k is 0 or 1;

when k is 1, Z is hydrogen, lower alkylthio, —COOH, —$CONH_2$—, amino, 1-adamantyl, diphenylmethyl, 3-[[(5-chloropyridin-2-yl)amino]carbonyl]pyrazin-2-yl, or Z is one of the following:

cycloalkyl or aryl containing 0 to 3 heteroatoms which may be the same or different, or a fused ring system containing two or three rings which rings are independently cycloalkyl or aryl containing 0 to 3 heteroatoms which may be the same or different, any of which rings may be unsubstituted, or substituted with at least one of:

halogen, cyano, amino, substituted amino, aminosulfonyl, nitro, oxo, hydroxy, aryl, aryloxy, unsubstituted lower alkyl, halogen-substituted lower alkyl, lower alkoxy-

substituted lower alkyl, lower alkoxy, lower alkanesulfonyl, lower alkylthio, acetyl, aminocarbonyl, hydrazino, carboxy, lower alkoxycarbonyl, or acetoxy; and

when k is 0, Z is 1-adamantyl, diphenylmethyl, 3-[[(5-chloropyridin- 2-yl)amino]carbonyl]pyrazin-2-yl, or Z is one of the following:

cycloalkyl or aryl containing 0 to 3 heteroatoms which may be the same or different, or a fused ring system containing two or three rings which rings are independently cycloalkyl or aryl containing 0 to 3 heteroatoms which may be the same or different, any of which rings may be unsubstituted, or substituted with at least one of:

halogen, cyano, amino, substituted amino, aminosulfonyl, nitro, oxo, hydroxy, aryl, aryloxy, unsubstituted lower alkyl, halogen-substituted lower alkyl, lower alkoxy-substituted lower alkyl, lower alkoxy, lower alkanesulfonyl, lower alkylthio, acetyl, aminocarbonyl, hydrazino, carboxy, lower alkoxycarbonyl, or acetoxy;

and pharmaceutically acceptable salts and esters thereof.

US 6,331,641 B1

PROCESS FOR PRODUCING SIMVASTATIN

Naoaki Taoka, Kobe, and Kenji Inoue, Kakogawa, both of Japan, assignors to Kaneka Corporation, Osaka, Japan

PCT No. PCT/JP99/06929, § 371 Date Sep. 28, 2000, § 102(e) Date Sep. 28, 2000, PCT Pub. No. WO00/34264, PCT Pub. Date Jun. 15, 2000

PCT Filed Dec. 10, 1999, Appl. No. 601,794

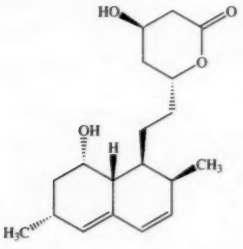
Claims priority, application Japan, Dec. 10, 1998, 10-351865

Int. Cl. C07D *309/30;319/06;* **C07C** *69/34*

U.S. Cl. 549—292 **17 Claims**

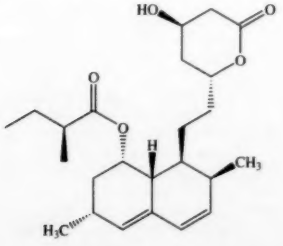
1. A process for producing a diol lactone of the formula (3);

(3)



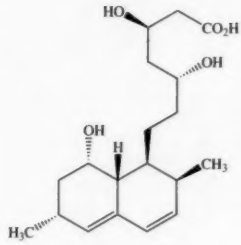
which comprises treating lovastatin of the formula (1) with an inorganic base and a secondary or tertiary alcohol at not more than 100° C. to give a triol acid of the formula (2);

(1)



-continued

(2)



and serially acidifying and lactonizing the triol acid (2) to give a diol lactone (3).

US 6,331,642 B1

VITAMIN D_3 ANALOGS

Andrew David Batcho, North Caldwell; Bernard Michael Hennessy, Nutley, and Milan Radoje Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

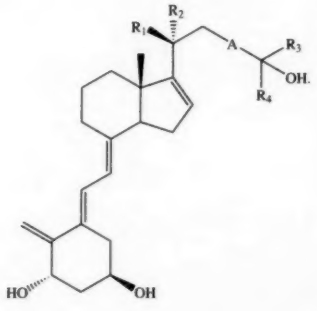
Provisional application No. 60/143,413, filed on Jul. 12, 1999. This application May 24, 2000, Appl. No. 578,324.

Int. Cl. C07C *401/00;* **A61K** *31/59*

U.S. Cl. 552—653 **7 Claims**

1. A compound of the formula

(I)

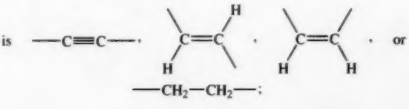


wherein

R_1 is hydrogen or an alkyl group;

R_2 is hydrogen or an alkyl group; or

R_1, R_2 and C_{20} together are cyclopropyl;

A is  ;

R_3 is alkyl, hydroxy-alkyl or fluoroalkyl; and

R_4 is a alkyl, hydroxyalkyl or fluoroalkyl.

US 6,331,643 B1

METHOD FOR PRESERVATION OF OLIVE OIL

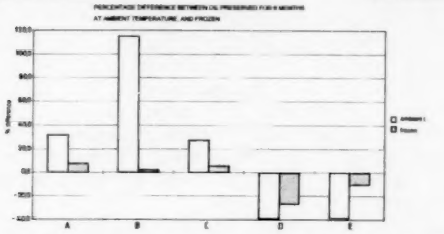
Neri Martini Bernardi; Sebastiano Martini Bernardi, and Niccoló Martini Bernardi Colantoni, all of Florence, Italy, assignors to Vivo S.r.l., Florence, Italy

Filed Jun. 1, 1999, Appl. No. 322,992

Claims priority, application Italy, Jul. 21, 1998, MI98A1677; Apr. 13, 1999, MI99A0755

Int. Cl. C07C *51/50*

U.S. Cl. 554—7 **10 Claims**



1. Method for preservation of olive oil, characterised in that it comprises freezing or deep-freezing of the oil, as soon as it has been pressed, at a temperature of between −40° C. and 0° C., for a period of up to three years.

US 6,331,644 B1

3-HETEROATOM SUBSTITUTED AND TWO CARBON HOMOLOGS OF 15-HETE AND METHODS OF USE

Peter G. Klimko, Forth Worth; Mark R. Hellberg, Arlington, and Gustav Graff, Cleburne, all of Tex., assignors to Alcon Universal Ltd., Hunenberg, Switzerland

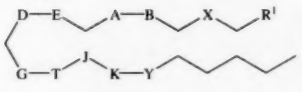
Provisional application No. 60/164,368, filed on Nov. 9, 1999. This application Oct. 23, 2000, Appl. No. 694,613.

Int. Cl. C07C *59/00*

U.S. Cl. 554—219 **4 Claims**

1. A composition for the treatment of dry eye and other disorders requiring the wetting of the eye comprising a pharmaceutically acceptable carrier and a pharmaceutically effective amount of one or more compounds of the following formula I:

I



wherein:

R^1 is $(CH_2)_nCO_2R$, $(CH_2)_nCONR^2R^3$, $(CH_2)_nCH_2OR^4$, $(CH_2)_nCH_2NR^5R^6$, $(CH_2)_nCH_2N_3$, $(CH_2)_nCH_2Hal$, $(CH_2)_nCH_2NO_2$, $(CH_2)_nCH_2SR^{20}$, $(CH_2)_n$ $COSR^{21}$ or $(CH_2)_n$-2,3,4,5, -tetrazol-1-yl, wherein:

R is H or CO_2R forms a pharmaceutically acceptable salt or a pharmaceutically acceptable ester;

NR^2R^3 and NR^5R^6 are the same or different and comprise a free or functionally modified amino group;

OR^4 comprises a free or functionally modified hydroxy group;

Hal is F, Cl, Br or I;

SR^{20} comprises a free or functionally modified thiol group;

R^{21} is H or $COSR^{21}$ forms a pharmaceutically acceptable salt or a pharmaceutically acceptable thioester;

n is 0 or 2;

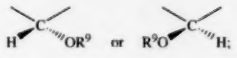
X is O, $S(O)_p$, NR^7 or CH_2, with the proviso that X cannot be CH_2 when n is 0;

p is 0, 1 or2;

NR^7 comprises a free or functionally modified amino group;

A—B, D—E, G—T and J—K are the same or different and are CH_2CH_2, CH═CH or C≡C, with the proviso that at least one of A—B, D—E, G—T and J—K must be CH═CH or C≡C; and

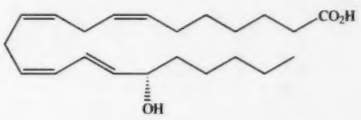
Y is C(O) (i.e., a carbonyl), or Y is



wherein R^9O constitutes a free or functionally modified hydroxy group,

with the proviso that the compounds of formula (II) are excluded:

II



wherein R is as defined above.

US 6,331,645 B2

PROCESS FOR PREPARING POWDERY ALKYL SULFATES

Futoshi Nishigaki, and Osamu Tabata, both of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Nov. 29, 2000, Appl. No. 725,250

Claims priority, application Japan, Dec. 1, 1999, 11-342190

Int. Cl. C07C *303/00*

U.S. Cl. 558—39 **3 Claims**

1. A process for preparing a powdery alkyl sulfate, comprising drying aqueous slurry having a solid content of 60 to 85% by weight and containing an alkyl sulfate and an alkali metal carbonate in a ratio of 0.05 to 10 parts by weight of the alkali metal carbonate based on 100 parts by weight of the alkyl sulfate.

US 6,331,646 B1

AMORPHOUS N-[N-(3,3-DIMETHYLBUTYL)-L-α-ASPARTYL] -L-PHENYLALANINE 1-METHYL ESTER

Steve A. Schroeder, Belvidere, and Run Wang, Gurnee, both of Ill., assignors to The NutraSweet Co., Chicago, Ill.

Provisional application No. 60/109,391, filed on Nov. 20, 1998. This application Nov. 19, 1999, Appl. No. 442,988.

Int. Cl. C07C *229/24*

U.S. Cl. 560—40 **32 Claims**

1. An non-crystalline amorphous N-[N-(3,3-dimethylbutyl)-L-α -aspartyl]-L-phenylalanine 1-methyl ester.

US 6,331,647 B1

PROCESS FOR THE PREPARATION OF A PURIFIED ACRYLAMIDO SULFONIC ACID MONOMER DERIVATIVE

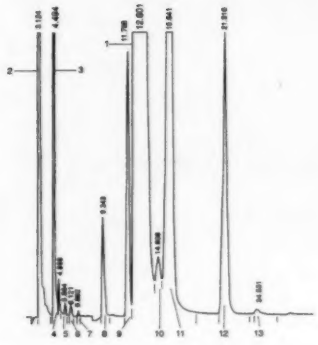
Robert E. Quinn, Cleveland; W. Michael Burke, Chardon, both of Ohio; William S. Henry, Houston, Tex., and Steven A. Goodlive, Lakewood, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of application No. 07/709,745, filed on Jun. 3, 1991, now abandoned. This application Dec. 14, 1994, Appl. No. 355,712.

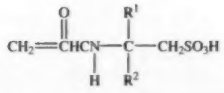
Int. Cl. C07C *309/15*

U.S. Cl. 562—105 **18 Claims**

1. A process for the preparation of a purified monomer comprising the steps of reacting a substantially aqueous solution of an impure monomer



(A)



wherein R^1 and R^2 are independently hydrogen or alkyl groups containing from 1 to about 6 carbon atoms, with

(B) a substantially aqueous solution of an oxide or hydroxide of the structure MO or MOH wherein M is a Group IA or Group IIA metal, or an amine of the structure $NR^3R^4R^5$ wherein R^3, R^4 and R^5 are independently hydrogen or alkyl, alkanol or alkoxy groups containing from 1 to about 12 carbon atoms,

wherein the molar ratio of (A):(B) is from about 1:1–2 for Group IA metals, 2:1–2 for Group IIA metals or ratio of moles of (A) to nitrogens of (B) is from about 1:1–2 nitrogens to form a salt, wherein in order to prevent polymerization of (A), the purified monomer or both or to prevent undesired side reactions, the reaction of (A) and (B) occurs at a temperature of between about −20 to 75° C. and at a pH between 7 to 12.5, and

recovering a purified salt by crystallization in the presence of an oxygen bearing gas stream either by removing water from the aqueous solution by subjecting the aqueous solution to an increase in temperature and/or a decrease in pressure or by decreasing the solubility of the salt in the aqueous solution by subjecting the aqueous solution to a decrease in temperature.

US 6,331,648 B1

ETHER AMINES AND DERIVATIVES

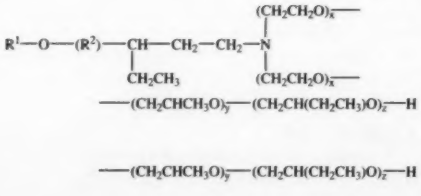
Thomas J. Daly, Barrington, Ill.; Michael Clumpner, Delayan, Wis., and Anthony J. O'Lenick, Jr., Dacula, Ga., assignors to Nova Molecular Technologies INC, Jonesville, Wis.

Continuation of application No. 09/459,562, filed on Dec. 13, 1999, now Pat. No. 6,114,585. This application May 8, 2000, Appl. No. 566,505.

Int. Cl. C07C *217/28*

U.S. Cl. 564—285 **22 Claims**

1. An ether amine derivative conforming to the following structure:



R^1 is selected from the group consisting of alkyl having 3 to 22 carbon atoms, aryl having 6 to 20 carbon atoms;

R^2 is $-(CH_2CH_2O)_a-(CH_2CH(CH_3)O)_b-(CH_2CH(CH_2CH_3)O)_c-$

a, b and c are independently integers ranging from 0 to 30, with the proviso that a+b+c are a minimum of 0 and a maximum of 60;

x, y and z are integers each ranging 0 to 30 with the proviso that x+y+z is a minimum of 2 and a maximum of 60.

US 6,331,649 B1

PROCESS FOR PRODUCING TRIFLUOROMETHYLBENZYLAMINES

Satoru Narizuka, and Yutaka Katsuhara, both of Saitama, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Mar. 21, 2000, Appl. No. 532,004

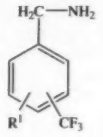
Claims priority, application Japan, Mar. 23, 1999, 11-078397

Int. Cl. C07C *211/00*

U.S. Cl. 564—384 **13 Claims**

1. A process for producing a trifluoromethylbenzylamine represented by the general formula (1)

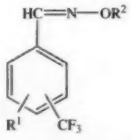
(1)



where R^1 represents a hydrogen atom, a halogen atom selected from the group consisting of fluorine, chlorine, bromine and iodine, or trifluoromethyl group,

said process comprising reducing an oxime represented by the general formula (2)

(2)



where R^1 is defined as above, and R^2 represents hydrogen atom, an alkyl group or an aralkyl group, by a catalytic hydrogenation of said oxime in the presence of a catalyst, in a reaction solvent containing an acid.

US 6,331,650 B1

METHOD FOR MANUFACTURING AMINOALCOHOL

Jin Tokuyasu; Koichiro Isoue; Katsushi Nagareda, and Takashi Onishi, all of Ibaraki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Aug. 2, 2000, Appl. No. 630,608

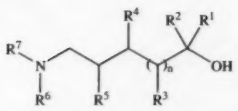
Claims priority, application Japan, Aug. 3, 1999, 11-219794; Aug. 3, 1999, 11-219795; Sep. 27, 1999, 11-272146

Int. Cl. C07C *211/00;* **C07D** *307/02*

U.S. Cl. 564—463 **15 Claims**

1. A method for manufacturing an aminoalcohol expressed by Formula 3a

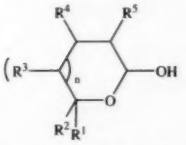
(3a)



where n is 0 or 1; R^1 and R^2 are each a hydrogen atom, a monovalent saturated hydrocarbon group which is optionally substituted, or a monovalent aromatic group which is optionally substituted, or R^1 and R^2 are bonded together into a divalent saturated hydrocarbon group which is optionally substituted; R^3, R^4, and R^5 are each a hydrogen atom, a monovalent saturated hydrocarbon group which is optionally substituted, or a monovalent aromatic group which is optionally substituted; and R^6 and R^7 are each a monovalent saturated hydrocarbon group which is optionally substituted or a monovalent aromatic group which is optionally substituted, or R^6 and R^7 are bonded together into a divalent saturated aliphatic group which is optionally substituted, which method comprises:

reacting a cyclic hemiacetal expressed by Formula 1

(1)



where n, R^1, R^2, R^3, R^4, and R^5 are defined the same as above with hydrogen and a secondary amine expressed by Formula 2a

(2a)

where R and R are defined the same as above in the presence of a hydrogenation catalyst to obtain the aminoalcohol of Formula 3a.

US 6,331,651 B1

PROCESS FOR MAKING HEXAMETHYLENE DIAMINE USING OZONE-TREATED ADIPONITRILE THAT CONTAINS PHOSPHOROUS COMPOUNDS

John Joseph Ostermaier, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application No. 09/664,569, filed on Sep. 18, 2000. This application Apr. 20, 2001, Appl. No. 839,808.

Int. Cl. C07C *209/48*

U.S. Cl. 564—490 **2 Claims**

1. A process for the production of HMD which comprises: (1) reacting butadiene with hydrogen cyanide in the presence of a hydrocyanation catalyst which comprises nickel(0) and a phosphorous-containing ligand to produce a hydrocyanation reaction product that comprises ADN, organic impurities, catalyst, ligand and phosphorous-containing impurities, (2) separating the catalyst and ligand from the hydrocyantion reaction product to make a crude ADN, (3) removing organic impurites from the crude ADN to make refined ADN, (4) contacting the refined ADN with ozone to produce ozone-treated ADN, (5) removing dissolved oxygen from the ozone-treated ADN to produce ozone-treated, deoxygenated ADN and (6) contacting the ozone-treated, deoxygenated ADN with hydrogen in the presence of an iron-containing hydrogenation catalyst to produce a hydrogenation reaction product that comprises HMD.

US 6,331,652 B1

PROCESS FOR PRODUCING LYCOPENE AND INTERMEDIATE THEREOF

Naoto Konya, Takatsuki, and Shinzo Seko, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 24, 2000, Appl. No. 624,860

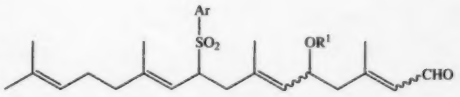
Claims priority, application Japan, Jul. 26, 1999, 11-210597

Int. Cl. C07F *9/54;* **C07C** *317/02;2/00*

U.S. Cl. 568—9 **20 Claims**

1. A process for producing a sulfonaldehyde derivative of formula (2):

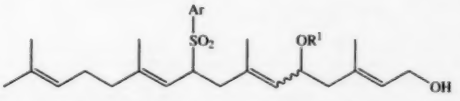
(2)



wherein Ar represents an aryl group which may be substituted, R^1 represents a lower alkyl group or a protective group of a hydroxyl group and the wavy line depicted by " ∼ " indicates a single bond and stereochemistry relating to a double bond bound therewith is E or Z or a mixture thereof,

which comprises oxidizing a sulfone alcohol derivative of formula (1):

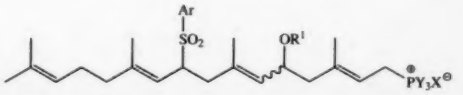
(1)



wherein Ar, R^1 and the wavy line respectively have the same meanings as defined above.

7. A process for producing a phosphonium salt of formula (3):

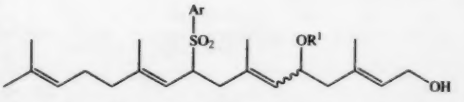
(3)



wherein Ar represents an aiyl group which may be substituted, R_1 represents a lower alkyl group or a protective group of a hydroxyl group, the wavy line depicted by " ∼ " indicates a single bond and stereochemistry relating to a double bound therewith is E or Z or a mixture thereof, X represents a halogen atom or HSO_4, and Y represents a lower alkyl group or an optionally substituted aryl group,

which comprises reacting a sulfone alcohol derivative of formula (1):

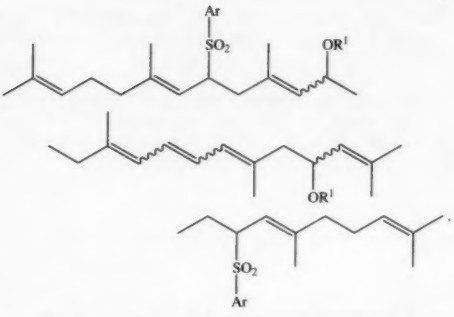
(1)



wherein Ar, R^1 and the wavy line respectively have the same meanings as defined above, with a salt of a tertiary phosphine compound and a protonic acid, or with a tertiary phosphine compound in the presence of a protonic acid, wherein said tertiary phosphine compound is represented by a formula: PY_3, wherein Y has the same meaning as defined above.

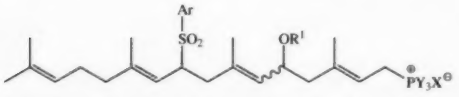
11. A process for producing a sulfone derivative of formula (4):

(4)



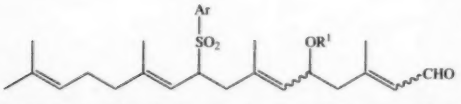
wherein Ar represents an aryl group which may be substituted, R^1 represents a lower alkyl group or a protective group of a hydroxyl group, and the wavy line depicted by " ⟋ " indicates a single bond and stereochemistry relating to a double bond bound therewith is E or Z or a mixture thereof, which comprises reacting a phosphonlium salt of formula (3):

(3)



wherein Ar, R^1 and the wavy line respectively have the same meanings as defined above, X represents a halogen atom or HSO_4, and Y represents a lower alkyl group or an optionally substituted aryl group, with a sulfonaldehyde derivative of formula (2):

(2)



wherein Ar, R^1 and the wavy line have the same meanings respectively as defined above, in the presence of a base or an epoxide.

US 6,331,653 B1

PROCESS FOR PRODUCING 3,4-DIHYDROXY-3-CYCLOBUTENE-1,2-DIONE

Shoshiro Matsushita, Tokyo; Ikuo Shimizu; Hiroshi Toyoda, both of Yokkaichi, and Asako Tanaka, Matsumoto, all of Japan, assignors to Kyowa Yuka Co., Ltd., Tokyo, Japan

PCT No. PCT/JP98/03989, § 371 Date Feb. 28, 2000, § 102(e) Date Feb. 28, 2000, PCT Pub. No. WO99/12881, PCT Pub. Date Mar. 18, 1999

PCT Filed Sep. 7, 1998, Appl. No. 486,363

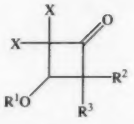
Claims priority, application Japan, Sep. 5, 1997, 9-240578

Int. Cl. C07C *45/00*

U.S. Cl. 568—347 **6 Claims**

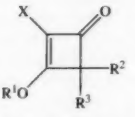
1. A method for manufacturing 3,4-dihydroxy-3-cyclobutene-1,2-dione represented by the following general formula (III), characterized in that a 3-alkoxy-2,2,4,4-tetrahalogenocyclobutanone derivative represented by the following general formula (I) is treated in the presence of an agent for dehydrohalogenation, to yield a 3-alkoxy-2,4,4-trihalogeno-2-cyclobutenc-1-one derivative represented by the following general formula (II), and then the 3-alkoxy-2,4,4-trihalogeno-2-cyclobutene-1-one derivative is further hydrolyzed

(I)



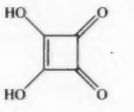
[wherein, R^1 represents an alkyl group; and R^2, R^3 and X are the same or different and each represents halogen]

(II)



[wherein, R^1, R^2, R^3 and X have the same meanings as described above]

(III)



US 6,331,654 B1

METHOD OF PRODUCTION OF PRODUCT ACETONE OF HIGH STABILITY TO OXIDATION

Vladimir Mikhailovitch Zakoshansky, Mt. Vernon, Ind., and Irina Ivanovna Vassilieva, St. Petersburg, Russian Federation, assignors to Illa International LLC, Reno, Nev.

Filed Feb. 10, 2000, Appl. No. 501,647

Int. Cl. C07C *45/83*

U.S. Cl. 568—411 **25 Claims**

1. A rectification method, for producing high purity acetone from CHP cleavage products, implemented in a multi-stage process system, the system comprising a first, a second, and a third column, the method comprising the steps of;

(a) producing an acetone fraction from a first column overhead, the first column functioning without reflux;

(b) providing a first partial condenser between the first and the second columns and delivering overhead products of the first column to said first partial condenser as a vapor phase, wherein from about 2 to about 10% relative products are condensed in said partial condenser;

(c) directing said condensed products to recycle to a feed of the first column and directing a non-condensed phase of said products comprising crude acetone to a feed of the second column;

(d) directing a take-off of an aldehyde fraction from the second column overhead and directing of this fraction to a neutralization stage;

(e) providing a second partial condenser between the second and the third columns and directing a take-off of the second column vapor phase as a side-draw to said second partial condenser to produce an acetone vapor phase and an acetonic liquid phase;

(f) directing said acetone vapor phase from said second partial condenser to a third column feed, treating said acetone liquid phase with an alkali solution and returning said acetone liquid phase to said first second column and to said neutralization stage of cumene hydroperoxide cleavage products; and

(g) removing a take-off of product acetone from the third column overhead, said product acetone having a high stability to oxidation, having a value of permanganate time from about 8 to about 70 hours.

US 6,331,655 B1

PROCESS FOR THE PREPARATION OF AROMATIC CARBONYL COMPOUNDS FROM STYRENES

Ian-Lucas Gatfield, and Jens-Michael Hilmer, both of Höxter, Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Germany

Filed Jun. 9, 2000, Appl. No. 591,637

Claims priority, application Germany, Jun. 19, 1999, 199 28 158

Int. Cl. C07C *45/00;63/64;53/134;309/00;* C12P *7/24*

U.S. Cl. 568—435 13 Claims

1. A process for the preparation of aromatic carbonyl compounds comprising the step of oxidatively cleaving styrenes in the presence of carboxylic acids or carboxylic esters by lipases and hydrogen peroxide or a hydrogen peroxide donor.

US 6,331,656 B1

HYDROFORMYLATION PROCESS

Heinrich-Josef Blankertz, Forst; Armin Volker Grenacher, Mutterstadt; Friedrich Sauer, Obersülzen; Harald Schwahn, Wiesloch; Willi Schönmann, Limburgerhof, and Michael Röper, Wachenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

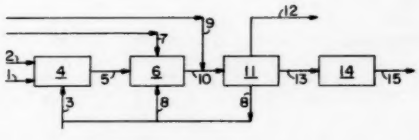
PCT No. PCT/EP97/04907, § 371 Date Mar. 4, 1999, § 102(e) Date Mar. 4, 1999, PCT Pub. No. WO98/12235, PCT Pub. Date Mar. 26, 1998

PCT Filed Sep. 19, 1997, Appl. No. 269,421

Claims priority, application Germany, Sep. 20, 1996, 196 38 796

Int. Cl. C07C *45/00*

U.S. Cl. 568—451 11 Claims



1. A process for the hydroformylation of olefins having from 12 to 100 carbon atoms in the presence of a cobalt carbonyl catalyst at pressures of from 100 to 400 bar and at from 100 to 200° C., depressurization and recovery of the cobalt catalyst by extraction with an aqueous acid solution in the presence of atmospheric oxygen, wherein

(a) the extraction is carried out in the presence of a polymeric emulsion breaker selected from the group consisting of alkoxylated compounds containing amino, imino or OH groups, and

(b) to achieve complete phase separation in the organic phase still containing small amounts of aqueous phase, the formation of relatively large droplets of the dispersed aqueous phase is effected in a coalescence stage.

US 6,331,657 B1

PROCESS FOR PREPARING HIGHER OXO ALCOHOLS FROM OLEFIN MIXTURES BY TWO-STAGE HYDROFORMYLATION

Alfred Kaizik; Bernhard Scholz; Walter Toetsch, all of Marl; Wilfried Bueschken, Haltern, and Franz Nierlich, Marl, all of Germany, assignors to Oxeno Olefinchemie GmbH, Marl, Germany

Filed Sep. 15, 1999, Appl. No. 396,371

Claims priority, application Germany, Sep. 9, 1998, 198 42 368

Int. Cl. C07C *29/16;29/141;29/149*

U.S. Cl. 568—882 22 Claims

1. A process for preparing higher oxo alcohols from mixtures of isomeric olefins having from 5 to 24 carbon atoms by two-stage hydroformylation in the presence of a cobalt catalyst or rhodium catalyst at elevated temperature and at elevated pressure, comprising:

(a) selectively hydrogenating a reaction mixture obtained by hydroformylating isomeric olefins having from 5 to 24 carbon atoms;

(b) distilling the hydrogenation mixture from (a) into crude alcohol and low-boilers,

wherein the low-boilers comprise unreacted olefins from the hydroformylation of the isomeric olefins;

(c) hydroformylating the low-boilers from (b);

(d) selectively hydrogenating the hydroformylation reaction mixture from (c);

(e) distilling the hydrogenation mixture from (d) into crude alcohol and low-boilers;

(f) distilling the crude alcohol to obtain a purified alcohol; and

(g) discharging at least a portion of low-boilers which comprise saturated hydrocarbons.

US 6,331,658 B1

GENETICALLY ENGINEERED MAMMALS FOR USE AS ORGAN DONORS

David K. C. Cooper, and Eugen Koren, both of Oklahoma City, Okla., assignors to Integris Baptist Medical Center, Inc., and Oklahoma Medical Research Foundation, both of Oklahoma City, Okla.

Continuation of application No. 08/049,817, filed on Apr. 20, 1993, now abandoned. This application Jan. 27, 1995, Appl. No. 379,040.

Int. Cl. C12N *15/09;15/63;15/00;5/00*

U.S. Cl. 800—14 18 Claims

10. A non-human transgenic mammal,

wherein the genome of the mammal stably includes a nucleotide sequence encoding a sialyltransferase or fucosyltransferase in operable linkage with a promoter,

wherein expression of the nucleotide sequence in at least some of the cells of an organ of the mammal results in a reduction of 1→3 galactosyl epitopes on the surface of at least some of the cells of the organ of the mammal such that the organ exhibits a decrease in antibody-mediated rejection when the tissue is exposed to human serum as compared to a mammalian organ of the same species which does not comprise cells expressing the nucleotide sequence.

US 6,331,659 B1

CUMULUS CELLS AS NUCLEAR DONORS

Teruhiko Wakayama, and Ryuzo Yanagimachi, both of Honolulu, Hi., assignors to University of Hawaii, Honolulu, Hi.

Provisional application No. 60/089,940, filed on Jun. 19, 1998, Provisional application No. 60/072,002, filed on Jan. 21, 1998. This application Aug. 10, 1998, Appl. No. 132,104.

Int. Cl. C12N *15/00;* A01K *67/00*

U.S. Cl. 800—24 22 Claims

1. A method for cloning a non-human mammal comprising the steps of:

(a) collecting a nucleus from a cumulus cell of an adult non-human mammal;

(b) inserting at least a portion of the nucleus that includes the chromosomes into an enucleated oocyte to form a renucleated oocyte;

(c) allowing the renucleated oocyte to develop into an embryo; and

(d) allowing the embryo to develop into a live offspring.

US 6,331,660 B1

MAIZE DIMBOA BIOSYNTHESIS GENES

Paul S. Chomet, Mystic, Conn.; Monika Frey, Garching, and Alfons Gierl, Munich, both of Germany, assignors to Dekalb Genetics Corporation, Dekalb, Ill.

Provisional application No. 60/040,513, filed on Mar. 13, 1997. This application Mar. 13, 1998, Appl. No. 39,046.

Int. Cl. A01H *1/00;4/00;25/00;5/10;* **C12N** *15/29*

U.S. Cl. 800—278 **60 Claims**

1. An isolated nucleic acid encoding a maize Bx1 polypeptide having the amino acid sequence of SEQ ID NO:2 linked operably to a promoter functional in plants, wherein said promoter is not the native Bx1 promoter.

US 6,331,661 B1

METHOD FOR DIRECTIONAL STABLE TRANSFORMATION OF EUKARYOTIC CELLS

Christopher L. Baszczynski, Urbandale; Leszek Alexander Lyznik, Johnston, and William J. Gordon-Kamm, Urbandale, all of Iowa, assignors to Pioneer Hi-Bred International, Inc., Johnston, Iowa

Provisional application No. 60/065,613, filed on Nov. 18, 1997,

Provisional application No. 60/065,627, filed on Nov. 18, 1997. This application Nov. 17, 1998, Appl. No. 193,484.

Int. Cl. C12N *15/90;5/04;15/82;* **A01H** *5/00;5/10*

U.S. Cl. 800—278 **47 Claims**

1. A method for targeting the insertion of a nucleotide sequence of interest to a specific chromosomal site within the genome of a plant cell, said method comprising:

transforming said plant cell with a transfer cassette, said transfer cassette comprises said nucleotide sequence of interest and said transfer cassette is flanked by or comprises non-identical recombination sites;

wherein said plant genome comprises a target site comprising non-identical recombination sites which correspond to the non-identical recombination sites of said transfer cassette; and,

providing a recombinase that recognizes and implements recombination at the non-identical recombination sites; wherein said transfer cassette is introduced into said plant cell by a transformation method which minimizes random integration of the transfer cassette into the genome of the plant cell and results in about 5 or fewer random integration events.

US 6,331,662 B1

PLANT RETROELEMENTS

David A. Wright, Boone, and Daniel F. Voytas, Ames, both of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Provisional application No. 60/087,125, filed on May 29, 1998. This application May 28, 1999, Appl. No. 322,478.

Int. Cl. C12N *15/33;15/82;* **A01H** *5/00;5/10*

U.S. Cl. 800—278 **5 Claims**

1. An isolated nucleic acid molecule, wherein said nucleic acid molecule encodes at least a portion of a plant retroelement and comprises a nucleic acid sequence selected from the group consisting of:

(a) a nucleic acid sequence which is at least a portion of a plant generic retroelement sequence and which has more than 50% identity to SEQ ID NO:17, wherein said identity can be determined using the DNAsis computer program and default parameters, and wherein said nucleic acid sequence has functional properties of a plant generic retroelement of SEQ ID NO: 17;

(b) the nucleic acid sequence of SEQ ID NO: 17;

(c) a nucleic acid sequence which encodes an amino acid sequence which has more than 40% identity to SEQ ID NO: 18, wherein said identity can be determined using the DNAsis computer program, and wherein said amino acid sequence has functional properties of the retroelement polypeptide of SEQ ID NO:18;

(d) a nucleic acid sequence which encodes the amino acid sequence of SEQ ID NO:18; and

(e) a nucleic acid sequence fully complementary to a nucleic acid sequence selected from the group consisting of: a nucleic acid sequence of (a) a nucleic acid sequence of (b) a nucleic acid sequence of (c) a nucleic acid sequence of (d).

3. A plant comprising a nucleic acid of claim **1**.

US 6,331,663 B1

MODIFIED FULL LENGTH PROMOTERS

Andreas S. Kloti, Durham, N.C., assignor to Paradigm Genetics, Inc., Research Triangle Park, N.C.

Filed Dec. 13, 1999, Appl. No. 459,427

Int. Cl. A01H *5/00;5/10;* **C12N** *5/04;15/82*

U.S. Cl. 800—278 **20 Claims**

12. A plant or plant part having a eukaryotic cell comprising DNA that is

a) SEQ ID NO: 10;

b) the complementary sequence thereof; or

c) the double stranded sequence of a) and b).

US 6,331,664 B1

ACYL-ACP THIOESTERASE NUCLEIC ACIDS FROM MAIZE AND METHODS OF ALTERING PALMITIC ACID LEVELS IN TRANSGENIC PLANTS THEREWITH

Beth Rubin-Wilson, Indianapolis; Lining Guo, Brownsburg; Tom Skokut, Carmel; Scott Young, Indianapolis, all of Ind.; Otto Folkerts, Guilford, Conn.; Katherine Armstrong, and Neil M. Cowen, both of Zionsville, Ind., assignors to Dow AgroSciences LLC, Indianapolis, Ind.

Provisional application No. 60/045,827, filed on May 5, 1997. This application Apr. 22, 1998, Appl. No. 64,411.

Int. Cl. A01H *5/00;* **C12N** *5/14;9/16;15/29;15/82*

U.S. Cl. 800—298 **16 Claims**

1. An isolated DNA molecule comprising a nucleic acid selected from the group consisting of SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:12, SEQ ID NO:16, SEQ ID NO:19, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:31, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:38, SEQ ID NO:43, SEQ ID NO:47, and SEQ ID NO:49.

US 6,331,665 B1

INSECT RESISTANT FERTILE TRANSGENIC CORN PLANTS

Ronald C. Lundquist, Minnetonka, and David A. Walters, Bloomington, both of Minn., assignors to DeKalb Genetics Corp., DeKalb, Ill.

Division of application No. 08/285,488, filed on Aug. 3, 1994, now Pat. No. 5,508,468, which is a continuation of application No. 07/636,089, filed on Dec. 28, 1990, now abandoned, which is a continuation-in-part of application No. 07/508,045, filed on Apr. 11, 1990, now Pat. No. 5,484,956, which is a continuation-in-part of application No. 07/467,983, filed on Jan. 22, 1990, now abandoned. This application Mar. 20, 1996, Appl. No. 619,077.

This patent is subject to a terminal disclaimer.

Int. Cl. A01H *5/00;* **C12N** *15/00;15/82*

U.S. Cl. 800—302 **33 Claims**

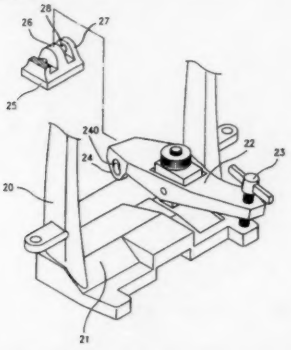
1. A fertile transgenic *Zea mays* plant comprising a preselected DNA sequence encoding a *Bacillus thuringiensis* endotoxin, wherein the preselected DNA sequence is adjusted to be more efficently expressed in maize than the native *B. thuringiensis* DNA sequence encoding said endotoxin, and wherein said preselected DNA is heritable.

US 6,331,666 B1

MOVEABLE HOLDER STRUCTURE FOR THE FOOT PEDAL OF A DRUM

Jung-Pin Chang, Taipei, Taiwan, assignor to New Sound Enterprise & Musical Instrument Mfg. Co. Ltd., Tai-Chung Hsien, Taiwan

Filed Sep. 18, 2000, Appl. No. 664,366
Int. Cl. G10D *13/02*
U.S. Cl. 84—422.1 2 Claims



1. A movable holder structure for a foot pedal of a drum comprising:

a base seat; an urging element pivotally mounted on said base seat; one end of said urging element having a locking bolt pressing against said base seat; an other end of said urging element having a pair of protruding lugs, each of said lugs having a long slot; a movable block having a positioning plate and two flexible side plates protruding from a top surface of said movable block; said positioning plate formed to fit between said pair of protruding lugs; each inner side of said two flexible side plates having a circular protruded block; said circular protruded block formed to engage said long slot on said lugs correspondingly, and therefore pivotally mounted said movable block on said other end of said urging element; said movable block fastened to a drum edge by rotating said locking bolt.

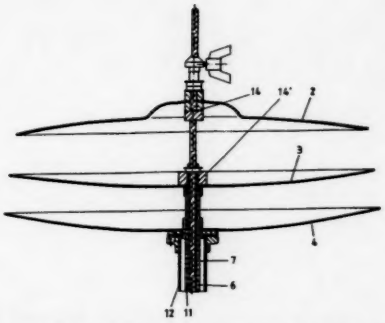
US 6,331,667 B1

RHYTHM INSTRUMENT WITH SEVERAL CYMBALS OF GRADUATED DIAMETERS

Peter Küppers, Kaiserstiege 143, Gronau D-48599, Germany

PCT No. PCT/DE99/00503, § 371 Date Oct. 19, 2000, § 102(e) Date Oct. 19, 2000, PCT Pub. No. WO99/50822, PCT Pub. Date Oct. 7, 1999
PCT Filed Feb. 25, 1999, Appl. No. 647,176
Claims priority, application Germany, Mar. 27, 1998, 198 48 459; Mar. 27, 1998, 198 13 610; Oct. 6, 1998, 198 45 963
This patent is subject to a terminal disclaimer.
Int. Cl. G01D *13/02*
U.S. Cl. 84—422.3 19 Claims

1. Rhythm instrument apparatus for producing sounds comprising an upper cymbal, a lower cymbal, the upper and lower cymbals having a central concavity with a surrounding edge, an operating device for controlling striking of the upper and lower cymbals, and



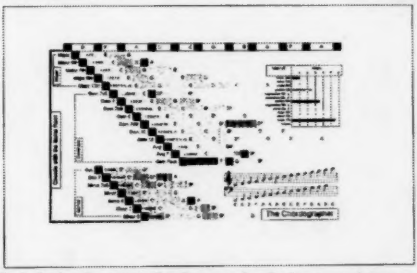
at least one fixed middle cymbal controlled by the operating device for striking the upper cymbal and/or the lower cymbal.

US 6,331,668 B1

METHOD AND DEVICE FOR MUSICAL REFERENCE

Thomas Michero, P.O. Box 5552, Austin, Tex. 78763

Filed Aug. 3, 2000, Appl. No. 631,852
Int. Cl. G09B *15/02*
U.S. Cl. 84—477 R 89 Claims



1. A device for musical reference, the device comprising:

a first surface, whereupon is presented musical information, wherein the musical information comprises columns of note values;

a second surface, whereupon is presented one or more music reference tools, wherein the second surface is operable to move with respect to the first surface;

wherein the musical information comprises a viewable portion and a hidden portion, wherein the viewable portion and the hidden portion vary as a function of the position of the second surface with respect to the first surface;

wherein the second surface is operable to display musical relationships in a plurality of keys for each of the music reference tools as a function of the viewable portion of the musical information;

wherein the one or more music reference tools comprise a chord progression map, wherein the chord progression map is key-independent; and

wherein the second surface is operable to display the chord progression map in a plurality of keys as a function of the musical information.

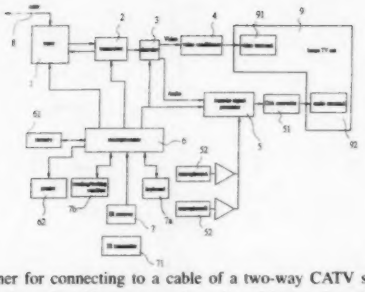
US 6,331,669 B1

BROADBAND COMMUNICATION KARAOKE

Shi-Cse Lee, No. 6, Lane 99, Chang Ji St., Taipei, Taiwan, and Tung-Hsing Pan, 3F, No. 12, Alley15, Lane71, Sec.1. Shi-Pei Rd., Peitou, Taipei, Taiwan

Filed Oct. 19, 2000, Appl. No. 691,027
Int. Cl. G09B *5/00;15/04;* G10H *1/26*
U.S. Cl. 84—609 13 Claims

1. A real-time broadband communication karaoke comprising:



a tuner for connecting to a cable of a two-way CATV system having selectable program channels, said tuner for selecting said program channels offered by said CATV system;

a transceiver for connecting to said tuner and being used to transmit or receive signals;

a decoder connected to said transceiver for decoding the signals received by transceiver into digital video and audio signals;

a video conditioner connected between said decoder and video terminals of a home TV set and for transforming the digital signals decoded by said decoder into TV compatible video signals;

a home TV set having audio terminals and video terminals for receiving said signal TV compatible video signals;

a karaoke signal processor connected to said decoder, a D/A converter and said audio terminals of said home TV set, as well as at least one microphone for producing audio signals and, said karaoke signal processor for mixing digital audio signals input from said decoder with said audio signals from said microphone, then transforming mixed digital audio signals into analog signals by said D/A converter and being output to said audio terminals of said home TV set;

a microprocessor connected with said tuner, said transceiver, said decoder and said karaoke signal processor to control the operation of these units;

a memory connected to said microprocessor for storing data;

a printer connected to said, microprocessor for providing printings;

an IR receiver connected to said microprocessor to receive signals; and

an IR transmitter for receiving the signals from said IR receiver and sending the signals to said microprocessor.

US 6,331,670 B2

SOLAR CELL MODULE HAVING AN OVERVOLTAGE PREVENTIVE ELEMENT AND SUNLIGHT POWER GENERATION SYSTEM USING THE SOLAR CELL MODULE

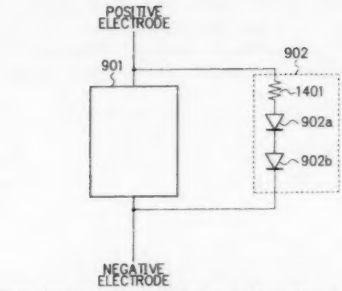
Nobuyoshi Takehara, and Naoki Manabe, both of Souraku-gun, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1999, Appl. No. 450,426

Claims priority, application Japan, Nov. 30, 1998, 10-339515; Nov. 10, 1999, 11-319348

Int. Cl. H01L *31/042*

U.S. Cl. 136—244 **30 Claims**



1. A solar cell module in which a plurality of photovoltaic elements are installed in such a manner as to be electrically connected with each other, wherein an overvoltage preventive element is electrically connected to each of said photovoltaic elements in parallel connection, and said overvoltage preventive element exhibits a one-way continuity and has a minimum operating voltage which is smaller than an open-circuit voltage of and greater than an optimum operating voltage of a photovoltaic element to which said overvoltage preventive element is electrically connected.

US 6,331,671 B1

INSTALLATION STRUCTURE OF SOLAR CELL MODULE ARRAY, INSTALLATION METHOD OF SOLAR CELL MODULE, AND SUNLIGHT POWER GENERATION SYSTEM

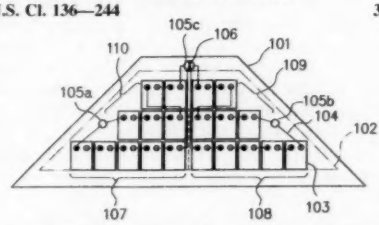
Hidehisa Makita, Kyotanabe; Toshihiko Mimura, Nara; Masahiro Mori, Souraku-gun; Yuji Inoue, Nara; Satoru Shiomi; Ayako Komori, both of Mishima; Yoshitaka Nagao, Souraku-gun; Makoto Sasaoka, Kyotanabe, and Shigenori Itoyama, Nara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 2000, Appl. No. 512,355

Claims priority, application Japan, Feb. 25, 1999, 11-047324; Feb. 23, 2000, 12-046107

Int. Cl. H01L *31/05*

U.S. Cl. 136—244 **33 Claims**



1. An installation structure of a solar cell module array in which a plurality of solar cell module strings are arranged on an installation face, said plurality of solar cell module strings having a plurality of solar cell modules, an inter solar cell module connection cable to electrically connect said plurality of solar cell modules, a positive string cable and a negative string cable, characterized in that a non-contacting means comprising an incombustible material is provided such that no contact occurs between said positive string cable and said negative string cable or between said inter solar cell module connection cable and said positive string cable or/and said negative string cable.

US 6,331,672 B1

PHOTOVOLTAIC CELL AND METHOD FOR MANUFACTURING THE SAME

Koichi Matsuda, Nara, and Jinsho Matsuyama, Souraku-gun, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

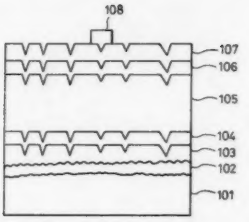
Filed Feb. 27, 1997, Appl. No. 807,590

Claims priority, application Japan, Mar. 1, 1996, 8-070961

Int. Cl. H01L *31/00*

U.S. Cl. 136—256 **38 Claims**

1. A photovoltaic cell comprising a substrate, a back reflector, a transparent conductive layer, and a photoelectric conversion layer,



wherein diffuse reflectance of said back reflector is 3 to 50% and wherein said transparent conductive layer has holes on its surface.

US 6,331,673 B1

SOLAR CELL MODULE HAVING A SURFACE SIDE COVERING MATERIAL WITH A SPECIFIC NONWOVEN GLASS FIBER MEMBER

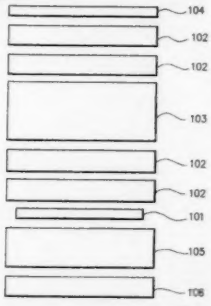
Ichiro Kataoya, Kyoto-fu; Takahiro Mori, Ikoma; Satoru Yamada; Hidenori Shiotsuka, both of Kyoto-fu, and Ayako Komori, Nara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1996, Appl. No. 731,571

Claims priority, application Japan, Oct. 17, 1995, 7-293315; Jan. 10, 1996, 8-018283

Int. Cl. H01L *31/0203;31/0236*

U.S. Cl. 136—259 **24 Claims**



1. A solar cell module comprising a solar cell element and at least a surface side covering material positioned on the light receiving face side of said solar cell element, said surface side covering material comprising at least a filler, a nonwoven glass fiber member, and a surface protective film, wherein said nonwoven glass fiber member has a thickness of 50 μm to 200 μm and a texture bonded with an acrylic resin.

US 6,331,674 B1

EXPLOSION PROOF TERMINAL BLOCK HOUSING THAT MAY BE OPENED

Michael J. Zolock, Longmont, and Allan L. Samson, Ft. Lupton, both of Colo., assignors to Micro Motion, Inc., Boulder, Colo.

Filed Mar. 31, 2000, Appl. No. 540,083

Int. Cl. H02G *3/18*

U.S. Cl. 174—60 **12 Claims**

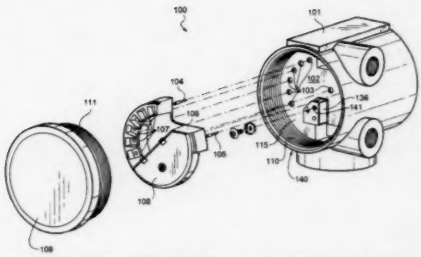
1. A terminal block for connecting intrinsically safe rated circuits and increased safety rated circuits comprising:

a housing that forms an enclosed area;

a first surface at a first end of said housing;

openings through said first surface;

a first set of conductors for connecting intrinsically safe rated circuits having terminals in said enclosed area and extending through said openings;



a second set of conductors for connecting increased safety rated circuits having terminals in said enclosed area and extending through said openings;

a wall on said first surface and extending substantially perpendicular to said first surface, the wall separating said terminals of first set of conductors from said terminals of said second set of conductors; and

a cover configured to affix to a top side of said wall on said first surface of said first end of said housing and extend substantially to a side of said housing to enclose said second set of conductors.

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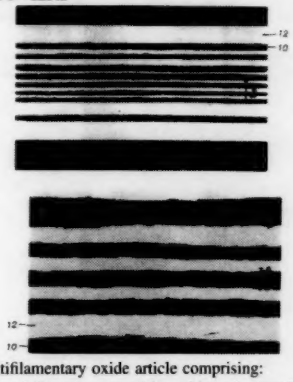
HIGH TEXTURE FACTOR

Qi Li, Waltham; Eric R. Podtburg, Natick; Patrick John Walsh, Newton; William L. Carter, Chelmsford; Gilbert N. Riley, Jr., Marlborough; Martin W. Rupich, Framingham, all of Mass.; Elliott Thompson, Coventry, R.I., and Alexander Otto, Chelmsford, Mass., assignors to American Superconductor Corporation, Westborough, Mass.

Division of application No. 08/468,089, filed on Jun. 6, 1995. This application Apr. 11, 1997, Appl. No. 843,041.

Int. Cl. H01B *12/10*

U.S. Cl. 174—125.1 **11 Claims**



1. A multifilamentary oxide article comprising:

a plurality of filaments comprising a bismuth-strontium-calcium-copper oxide (BSCCO) superconductor, said filaments extending continuously for the length of the article; and

a constraining member substantially surrounding each said filament,

wherein each of said filaments has an average transverse cross-sectional thickness less than about 35 μm and an average variation in cross-section along its length of less than about 10%, and wherein the oxide filament of the article is textured and the degree of texturing is greater than 0.9 throughout the oxide filament.

US 6,331,676 B1

PRIMARY CABLE OF COMPRESSED CONDUCTOR

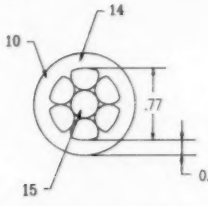
Carlos Tenorio Gutierrez, and Artemio Martinez Corona, both of Querétaro, Mexico, assignors to Servicios Condumex S.A. de C.V., Querretaro, Mexico

Filed Feb. 17, 1998, Appl. No. 25,130

Claims priority, application Mexico, Feb. 18, 1997, 971243

Int. Cl. H01B *5/08*

U.S. Cl. 174—128.1 **20 Claims**



1. Compressed conductor, low tension primary cable suitable for use in automotive wiring harness wherein the cross sectional area of a wire nucleus is unchanged which allows conduction of an unchanged amount of electric current as compared to a corresponding non-compressed cable characterized by a one-row joint of previously drawn, pre-twisted copper wires around a central wire that together form a conductor nucleus; wherein the joint is compacted by the pre-twisting of the wire nucleus till close to the limits of its electric resistance; whereby the nucleus is free of internal and external voids; and further comprising directly adjacent to the conductor nucleus is an external surrounding cover extruded of insulator comprising a thermoplastic component consisting essentially of a single layer of polyvinylchloride formulation wherein the external cover has a thin wall and high electrical resistance.

US 6,331,677 B1

OVERHEAD WIRE

Takeo Munakata; Naoshi Kikuchi; Takashi Shinohara; Hideo Banse; Takao Kaneko; Hiroji Akasaka; Yukikatsu Aida, all of Tokyo; Naoyoshi Shimokura; Yuji Ishikubo, both of Osaka; Tetsuya Okada, and Tamezo Suzuki, both of Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, and The Kansai Electric Power Co., Inc., Osaka, both of Japan

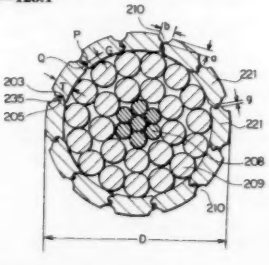
PCT No. PCT/JP98/04153, § 371 Date Oct. 28, 1999, § 102(e) Date Oct. 28, 1999, PCT Pub. No. WO99/17306, PCT Pub. Date Apr. 8, 1999

PCT Filed Sep. 16, 1998, Appl. No. 308,625

Claims priority, application Japan, Sep. 29, 1997, 9-263627; Oct. 20, 1997, 9-304832; Mar. 28, 1998, 10-100506

Int. Cl. H01B *5/08;* **H02G** *7/14*

U.S. Cl. 174—128.1 **26 Claims**



1. An overhead cable comprising:

a tension-bearing core;

a conductive layer provided at the outer circumference of said core; and

an outermost layer formed by twisting together a plurality of segment strands at the outer circumference of said conductive layer,

said outermost layer formed by the plurality of segment strands having at a part of an outer circumferential surface of said segment strands or outer circumferential surface regions where said segment strands are twisted together to adjoin each other at either one groove or a plurality of grooves that form a spiral shape along an outer surface of said outermost layer, each groove including a first surface opposite from and substantially parallel to a second surface and a bottom portion with a rectangular cross-section formed there between at intervals in the circumferential direction of the overhead cable,

wherein at least one of said plurality of spiral grooves is formed to satisfy the following condition

$$1<W/h<16$$

where a width and a depth of the cross-section are W and h.

US 6,331,678 B1

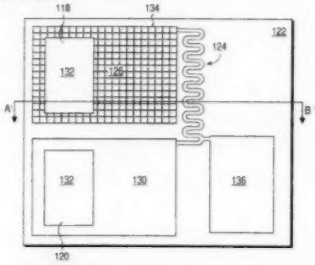
REDUCTION OF BLISTERING AND DELAMINATION OF HIGH-TEMPERATURE DEVICES WITH METAL FILM

Tak Kui Wang, Havertown, Pa.; Phillip W. Barth, Portola Valley, and Michel G. Goedert, Mt. View, both of Calif., assignors to Agilent Technologies, Inc., Palo Alto, Calif.

Filed Oct. 29, 1999, Appl. No. 429,051

Int. Cl. H05K *1/00; 1/03; 1/09*

U.S. Cl. 174—253 **12 Claims**



1. A device, comprising a multi-layered electronic micro-component that comprises:

(a) a dielectric layer on a substrate, the dielectric layer having a dielectric layer thermal expansion coefficient; and

(b) a micro-mesh of a first electrical conductor secured to the dielectric layer, the first electrical conductor having a thermal expansion coefficient different from the dielectric layer thermal expansion coefficient, wherein the device is operable at a temperature of at least 250° C. without the first electrical conductor delaminating or blistering from the dielectric layer.

US 6,331,679 B1

MULTI-LAYER CIRCUIT BOARD USING ANISOTROPIC ELECTRO-CONDUCTIVE ADHESIVE LAYER

Mitsutoshi Higashi, Nagano, Japan, assignor to Shinko Electric Industries Co., Ltd., Nagano, Japan

Continuation of application No. 08/909,594, filed on Aug. 12, 1997, now Pat. No. 6,147,311. This application Sep. 26, 2000, Appl. No. 669,728.

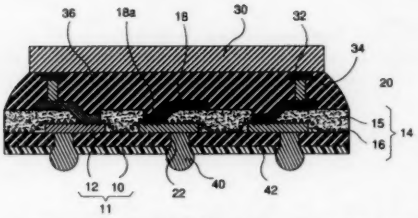
Claims priority, application Japan, Aug. 12, 1996, 8-212643

Int. Cl. H05K *1/16;* **H01R** *9/09*

U.S. Cl. 174—260 **4 Claims**

1. A semiconductor device comprising:

a multilayer circuit board using an anisotropic electro-conductive adhesive layer, comprising a substrate on which a first circuit pattern is formed, an anisotropic electro-



conductive adhesive layer formed on a surface of the substrate on which the first circuit pattern is provided, said anisotropic adhesive consisting of a thermosetting or thermoplastic resin adhesive base containing electro-conductive particles dispersed therein, and a second circuit pattern formed directly on the anisotropic electro-conductive adhesive layer, wherein an end of the second circuit pattern is curved into said base of the anisotropic electro-conductive adhesive layer to be closer to the substrate and electrically connected to the first circuit pattern via the electro-conductive particles and a second end of the second circuit pattern provides a land;

a semiconductor element mounted on said anisotropic electro-conductive adhesive layer in such a manner that electrode terminals of said semiconductor element are electrically connected to said lands; and

an underfill layer comprising resin filled in a space between said semiconductor element and said anisotropic electro-conductive adhesive layer.

US 6,331,680 B1

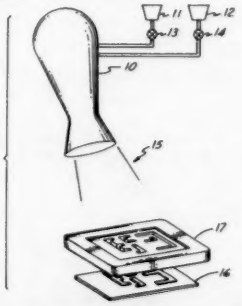
MULTILAYER ELECTRICAL INTERCONNECTION DEVICE AND METHOD OF MAKING SAME

David John Klassen, Dexter; Morgan Merritt Whitney, Jr., Grosse Pointe; Thomas Randall Peterman, Belleville; Paul Earl Pergande, Beverly Hills, and David Robert Collins, Brownstown, all of Mich., assignors to Visteon Global Technologies, Inc., Dearborn, Mich.

Filed Aug. 7, 1996, Appl. No. 689,164

Int. Cl. H01R *12/04*

U.S. Cl. 174—261 **8 Claims**



1. An interconnect device for interconnecting electronic components comprising:

a substrate;

a first conducting layer including conductive traces deposited over said substrate in a first pattern by thermal spraying;

a first insulating layer deposited over said first conducting layer by thermal spraying in a second pattern not including selected regions of said first conducting layer, said first insulating layer adhering to said first conducting layer by mechanical bonding as a result of thermal spraying; and

a second conducting layer deposited over said first insulating layer and said first conducting layer by thermal spraying in a third pattern including at least one of said selected regions, said second conducting layer adhering to said first insulating layer by mechanical bonding as a result of thermal spraying; whereby said selected regions provide interconnects between conducting layers through direct metallurgical bonding.

US 6,331,681 B1

ELECTRICAL CONNECTION DEVICE FOR FORMING AND SEMICONDUCTOR DEVICE HAVING METAL BUMP ELECTRICAL CONNECTION

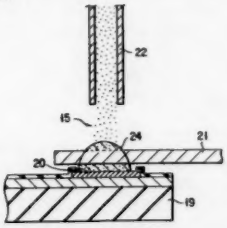
Katsuya Okumura, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of application No. 08/132,211, filed on Oct. 6, 1993, now Pat. No. 5,328,078, which is a continuation of application No. 07/813,670, filed on Dec. 27, 1991, now abandoned. This application Mar. 18, 1994, Appl. No. 214,623.

Claims priority, application Japan, Jan. 9, 1991, 3-62764

Int. Cl. H05K *1/16;* **H01L** *23/48;* **B23K** *31/00*

U.S. Cl. 174—267 **7 Claims**



1. A semiconductor device comprising:

a semiconductor chip;

a pad formed on and extending along a surface of said semiconductor chip;

a lead provided on said pad, the lead extending along the surface of said semiconductor chip; and

a bump of fine metal particles bonded together by spraying said fine metal particles onto said lead of said pad to form a raised surface covering and surrounding said lead and adhering said lead to said pad so that said lead and said pad form a sealed connection, said raised surface thereby electrically connecting said lead to said pad.

US 6,331,682 B1

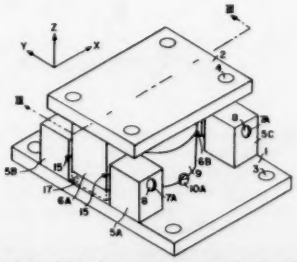
TANK WEIGH MODULE WITH EXCESS MOTION RESTRAINT

Randall K. Hopkins, Mendon, and Thomas W. Hansson, Natick, both of Mass., assignors to Hottinger Baldwin Measurements, Inc., Marlboro, Mass.

Provisional application No. 60/116,638, filed on Jan. 21, 1999. This application Jan. 14, 2000, Appl. No. 483,612.

Int. Cl. G01G *23/02*

U.S. Cl. 177—154 **20 Claims**



1. A weigh module adapted to receive a load cell and transfer forces into the load cell, said weigh module comprising:

a first plate unit including a first plate and a first stop block that is rigidly connected to and protrudes away from said first plate and that has a first pin receiving hole therein;

a second plate unit including a second plate and a second stop block that is rigidly connected to and protrudes away from said second plate and that has a second pin receiving hole therein; and

a first restraining pin that is received and retained in said first and second receiving holes; wherein:

said first and second plate units are arranged facing opposite one another with said first stop block protruding toward said second plate and said second stop block protruding toward said first plate, with said first and second stop blocks adjacent one another such that said first and second pin receiving holes are aligned with each other to receive said first restraining pin therein, and adapted to receive the load cell between said first and second plates;

at least one of said first and second pin receiving holes has an inner dimension that is larger than an outer dimension of said first restraining pin received within said inner dimension so as to leave a radial free play clearance therebetween;

said first restraining pin is retained with respect to said first and second stop blocks and has such a length so as to allow an axial free play clearance along said first restraining pin between said first and second stop blocks;

said first and second plate units can tilt relative to each other about said first restraining pin;

said first and second plate units can move laterally relative to each other in directions in an XZ plane perpendicular to an axis of said first restraining pin within a range of said radial free play clearance; and

said first and second plate units can move laterally relative to each other in a Y direction parallel to said axis of said first restraining pin within a range of said axial free play clearance.

US 6,331,683 B1

DRYING BALANCE WITH TEMPERATURE CALIBRATION DISK

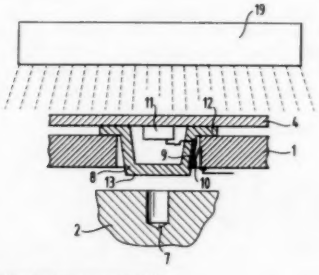
Wilfried Spannagel, Göttingen; Karin Diedrich, Hardegsen; Olaf Dudda, Göttingen, and Christian Baseler, Lübeck, all of Germany, assignors to Sartorius AG, Goettingen, Germany

Filed May 22, 2000, Appl. No. 577,680

Claims priority, application Germany, May 20, 1999, 299 08 892 U

Int. Cl. G01N *25/00;* **G01K** *15/00;* **G01G** *9/00*

U.S. Cl. 177—245 **8 Claims**



1. A drying balance, comprising:

a load receiver having a vertical hole;

a pan supported by the load receiver;

a radiation source to heat and dry a substance on the pan;

a pin on an underside of the pan, the pin projecting into the vertical hole of the load receiver;

a housing having an opening with mating contacts, a diameter of the opening being substantially larger than a diameter of the pin on the underside of the pan;

a temperature calibrating disk having at least one temperature sensor; and

a plug on the underside of the temperature calibrating disk, the plug having a plurality of contacts on an outer surface of the plug, wherein the plug projects into the opening of the housing without contacting the load receiver and wherein the plug establishes an electrical connection with the mating contacts at the opening of the housing.

US 6,331,684 B1

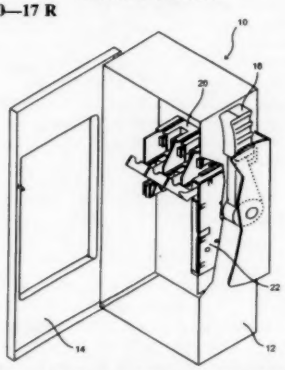
MODULAR SWITCH MECHANISM

Hamid S. Abroy; David E. Greer, both of Lexington, and John K. Leppla, Georgetown, all of Ky., assignors to Square D Company, Palatine, Ill.

Filed Dec. 30, 1999, Appl. No. 474,966

Int. Cl. H01H *3/00*

U.S. Cl. 200—17 R **19 Claims**



1. A switch mechanism module for an electrical distribution device, the electrical distribution device having a switch assembly within an enclosure, and a handle external to the enclosure for controlling the switch mechanism module, the switch mechanism module comprising:

a first housing member having a substantially planar wall and an integral stop depending therefrom;

a corresponding second housing member mating with the first housing member, the second housing member having a substantially planar wall and an integral leg depending therefrom; and,

an operating mechanism having a cam operably connected to the handle for rotation upon movement of the handle, wherein the first housing member and second member housing mate around the operating mechanism, wherein the integral stop of the first housing member stops movement of the cam in one direction, and wherein the integral leg of the second housing member provides reinforcement for the integral stop to prevent movement of the integral stop in the direction of the cam.

US 6,331,685 B1

MOUNTING SYSTEM FOR A CIRCUIT BREAKER

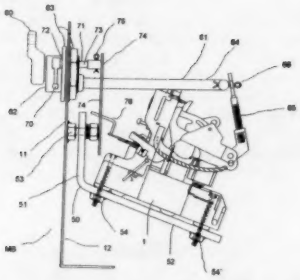
Demófilo Maldonado-Cortés, Nuevo León, Mexico, assignor to Prolec GE, S. de R.L. de C.V., Apodaca, Mexico

Filed Oct. 18, 2000, Appl. No. 691,618

Int. Cl. H01H *3/00*

U.S. Cl. 200—17 R **6 Claims**

1. A mounting system for a circuit breaker of the type comprising a circuit breaker body including internal breaking components, a winding elongated connection and a low tension elongated connection, a fixed break contact and a movable break contact, mounted in a hinged fashion on the circuit breaker body, having an actuator rod, and an overload actuator having an actuator pin; said mounting system comprising:



a mounting box comprising a mounting wall having an internal face;

an angular mounting plate, including a planar portion retained to the internal face of the mounting wall of the mounting box, and an angular portion at about 200° in which the circuit breaker body is retained at an angle substantially perpendicular to regarding the planar portion of the mounting plate and to the internal face of the mounting wall of the mounting box;

a mechanical breaker actuator handle, retained to the mounting wall of the mounting box, including a short actuator bar having a first end coupled to the mechanical breaker actuator handle, and a second end passing through the mounting wall of the mounting box;

a short actuator rod having a first end coupled to the second end of the actuator bar of the mechanical breaker actuator handle, and a second end coupled to a movable break contact of the circuit breaker, in order to operate the movable breaker contact against a fixed breaker contact, on and off, by a rotational operation of the mechanical breaker actuator handle; and

a short overload actuator handle including a short overload actuate bar having a first end coupled to the overload actuator handle, and a second end passing through the mounting wall of the mounting box; and

a link arm coupled to the second end of the overload actuator bar, in order to operate an overload actuator, on and off, by a rotational operation of the overload actuator handle.

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APPARATUS HAVING A SWITCH WHICH IS OPERABLE VIA A DOME-SHAPED ELASTIC COVER

Johann Rogatschnig, Velden, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 23, 1999, Appl. No. 274,394

Claims priority, application European Pat. Off., Mar. 27, 1998, 98890086

Int. Cl. H01H *13/06*

U.S. Cl. 200—302.2 **6 Claims**

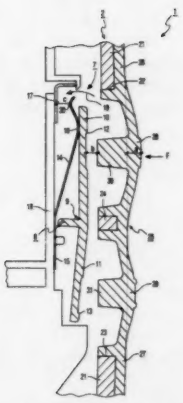
1. An apparatus comprising:

a housing having a housing wall formed with a passage;

a cover closing said passage and connected to the housing wall, which cover is elastically deformable and has a portion which is raised with respect to an adjacent area of the housing wall in a rest position of the cover, the raised portion of the cover being movable transversely to the housing wall in a direction toward the apparatus interior from a rest position into an operating position, and which has an actuator which, when the raised portion is moved from its rest position into its operating position, is moved from an inactive position into an active position,

a switching system which includes a switch which is accommodated in the apparatus and by means of which, when the actuator is moved from its inactive position into its active position, a switching function is activated, wherein

when the raised portion of the cover has been moved out of its rest position into a position flush with the adjacent area of the housing wall, the actuator of the cover occupies an intermediate position situated between its inactive position and its active position, in



which intermediate position an actuation of a switching function of the switch with the aid of the actuator is avoided, and the raised portion of the cover is movable towards the apparatus interior out of its position in which it is flush with the adjacent area of the housing wall into an operating position in which the actuator actuates the switch.

US 6,331,687 B1

CONTROL METHOD AND DEVICE FOR A SWITCHGEAR ACTUATOR

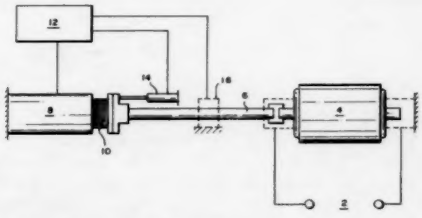
Michael P. Dunk, Caledonia, Wis.; Garrett P. McCormick, Carlisle, Pa., and John F. Baranowski, Franklin, Wis., assignors to Cooper Industries Inc., Houston, Tex.

PCT No. PCT/US96/07114, § 371 Date Sep. 23, 1998, § 102(e) Date Sep. 23, 1998, PCT Pub. No. WO96/36982, PCT Pub. Date Nov. 21, 1996

Continuation-in-part of application No. 08/440,783, filed on May 15, 1995, now abandoned. This PCT application May 15, 1996, Appl. No. 945,384.

Int. Cl. H01H *33/66;33/59;75/00;* **H02H** *3/08*

U.S. Cl. 218—140 **19 Claims**



1. A current interrupter, comprising:

a current interrupting device having at least one movable contact;

an actuator coupled to the movable contact of the current interrupter;

a feedback sensor for monitoring movement of the actuator during an actuation cycle; and

a control system coupled to the feedback sensor so as to receive information from the feedback sensor concerning the movement of the actuator during the actuation cycle and for directly controlling movement of the actuator during the actuation cycle based on the information from the feedback sensor.

US 6,331,688 B1

USE OF A METAL POWDER FOR SURFACE COATING BY SUBMERGED ARC WELDING

Hans Hallén, Helsingborg, and Karl-Erik Johansson, Höganäs, both of Sweden, assignors to Höganäs AB, Hoganas, Sweden

Continuation of application No. PCT/SE97/01601, filed on Sep. 23, 1997. This application Mar. 23, 1999, Appl. No. 274,332.

Claims priority, application Sweden, Sep. 23, 1996, 9603486

Int. Cl. B23K *9/04*

U.S. Cl. 219—73.21 23 Claims

1. A method of submerged arc welding of a metal substrate with one or more consumable electrode wires or electrode cords, the method comprising direct feeding an atomized prealloyed metal powder containing high amounts of alloying elements into a weld pool formed by the submerged arc, the powder being magnetically attached to the outside of the melting consumable electrode.

US 6,331,689 B1

METHOD AND DEVICE FOR PRODUCING A POWDER AEROSOL AND USE THEREOF

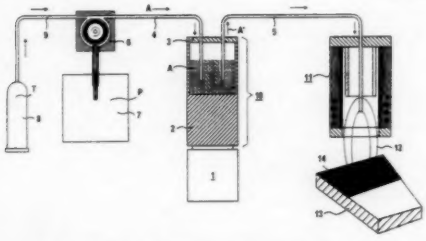
David-Walter Branston, Effeltrich; Guenter Lins, and Jobst Verieger, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Germany

PCT No. PCT/DE99/01745, § 371 Date Mar. 12, 2001, § 102(e) Date Mar. 12, 2001, PCT Pub. No. WO99/66096, PCT Pub. Date Dec. 23, 1999

PCT Filed Jun. 15, 1999, Appl. No. 719,830

Int. Cl. B23K *10/00*

U.S. Cl. 219—121.59 13 Claims



1. A method for producing a powder aerosol which can be fed in metered form via a gas stream to a plasma burner, for which purpose the powder aerosol without any aggregates is required to be provided at a constant mass flow rate, comprising the following method steps:

drawing a powder from a reservoir area by mechanical means;

converting the powder, via a propellant gas, to the powder aerosol;

introducing the powder aerosol into a container to which ultrasound can be applied and whose volume to which ultrasound is applied is used as a storage and/or buffer means for the aerosol;

using the ultrasound affect to break up powder lumps or aggregations in the powder aerosol, thus making the powder aerosol more uniform and finer; and

feeding the powder aerosol, which has been made more uniform and finer, to the plasma burner.

US 6,331,690 B1

PROCESS FOR PRODUCING SINGLE-WALL CARBON NANOTUBES UNIFORM IN DIAMETER AND LASER ABLATION APPARATUS USED THEREIN

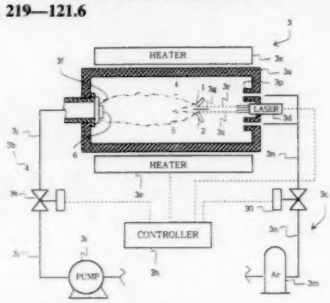
Masako Yudasaka, and Sumio Iijima, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of application No. 09/177,790, filed on Oct. 23, 1998. This application May 3, 2000, Appl. No. 562,959.

Claims priority, application Japan, Dec. 22, 1997, 9-352833

Int. Cl. B23K *26/00;26/12;26/16*

U.S. Cl. 219—121.6 7 Claims



1. A laser ablation system for producing carbon nanotubes, comprising:

a reactor having an air-tight chamber where a source of carbon vapor and a source of catalyst vapor are separately provided;

a laser beam generator provided for said reactor and radiating laser beams to said source of carbon vapor and said source of catalyst vapor for producing a carbon vapor/cluster and a catalyst vapor/cluster from said source of carbon vapor and said source of catalyst vapor, respectively;

an evacuating sub-system connected to said reactor for evacuating a gaseous mixture from said air-tight chamber;

a carrier gas supply sub-system connected to said reactor supplying carrier gas to said air-tight chamber for forming a carrier gas flow in said air-tight chamber; and

a collector provided in said carrier gas flow and capturing carbon nanotubes formed from said carbon vapor/cluster in the presence of said catalyst vapor/cluster and carried on said carrier gas flow.

US 6,331,691 B1

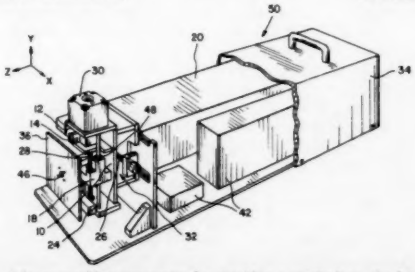
PRECISION GUIDING APPARATUS FOR LASER MARKING SYSTEM

Joseph DePrisco, Fort Wayne; Brad Good, Columbia City; Kermit Hogeston, and Brent Lahey, both of Churubusco, all of Ind., assignors to Automated Laser Corporation, Huntertown, Ind.

Filed Sep. 20, 1999, Appl. No. 399,614

Int. Cl. B23K *26/00*

U.S. Cl. 219—121.68 16 Claims



1. A laser marking apparatus for marking a workpiece, the laser beam being operable to travel in a coordinate system including an x-axis, a y-axis, and a z-axis, said apparatus comprising:

a laser source, said laser source being operative to produce a laser beam traveling substantially along the z-axis from said laser source; and

an x-y axis guiding apparatus for guiding said laser beam, said x-y axis guiding apparatus being moveable along the x-axis and the y-axis, said x-y axis guiding apparatus includes an x-axis guide shaft, y-axis guide shaft, a first guide component operable connected to said x-axis guide shaft for movement therealong, a second guide component operably connected to said y-axis guide shaft for movement therealong, a first bearing positioned and operative to allow relative movement between said x-axis guide shaft and said first guide component, a second bearing positioned and operative to allow relative movement between said y-axis guide shaft and said second guide component, a first biasing means operatively connected to said first bearing, whereby said first biasing means is operative to maintain said first bearing in operative relationship with said x-axis guide shaft while said first bearing maintains its operative relationship with said first guide component, and a second biasing means operatively connected to said second bearing, whereby said second biasing means is operative maintain said second bearing in operative relationship with said y-axis guide shaft while said second bearing maintains its operative relationship with said second guide component.

US 6,331,692 B1

DIODE LASER, LASER OPTICS, DEVICE FOR LASER TREATMENT OF A WORKPIECE, PROCESS FOR A LASER TREATMENT OF WORKPIECE

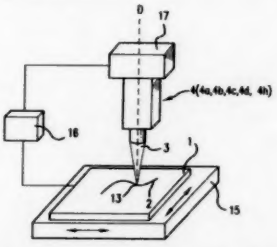
Volker Krause, Kupferbergstr. 4, D-67292 Kirchheimbolanden, and Christoph Ullmann, Pfarrer Hambuchenweg 11, D-53639 Konigswinter, both of Germany

Filed Oct. 8, 1997, Appl. No. 946,972

Claims priority, application Germany, Oct. 12, 1996, 196 42 194; Oct. 15, 1996, 196 42 504; Nov. 27, 1996, 196 49 113; Jan. 16, 1997, 197 01 222

Int. Cl. B23K *26/06*

U.S. Cl. 219—121.73 **19 Claims**



1. A device for treating a workpiece with a laser beam on a surface of said workpiece along a machining contour, said device comprising:

a laser head having:

a diode laser arrangement with a plurality of emitters formed on at least one chip, each emitter having an active laser light emitting layer for generating an emitter-laser-beam, said layer extending in a second axial direction (slow-axis), and perpendicular to a first axial direction (fast-axis), and

slow axis and fast axis collimators for said emitters consisting of microcylinder lenses forming said laser beam from said emitter-laser-beams of said plurality of emitters, said laser beam having a longitudinal cross section with a major extension in said second axial direction (slow axis),

laser optics focusing said laser beam on the surface in a focus having a longitudinal extension; and

means for turning said laser head around a center of said focus point such that the longitudinal extension of said focus point forms a tangent to said machining contour.

US 6,331,693 B1

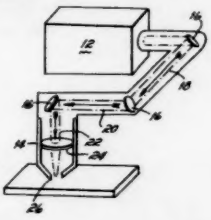
BEAM DELIVERY SYSTEM

Dale Smyth, Lawrenceburg, Ind., assignor to Cincinnati Incorporated, Harrison, Ohio

Filed Jun. 28, 1999, Appl. No. 344,772

Int. Cl. B23K *26/14;26/16*

U.S. Cl. 219—121.84 **23 Claims**



1. A beam delivery system in which a photon energy beam is directed along a beam path, said beam delivery system comprising an outer housing at least partially surrounding a length of the beam path and a gas distribution tube positioned within said outer housing proximate at least a portion of the length of the beam path, said gas distribution tube having a plurality of spaced-apart openings therein for delivering a flow of a pressurized gas directed substantially toward the beam path at a plurality of locations.

US 6,331,694 B1

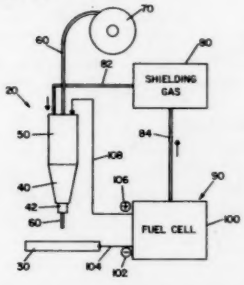
FUEL CELL OPERATED WELDER

George D. Blankenship, Chardon, Ohio, assignor to Lincoln Global, Inc., Monterey Park, Calif.

Filed Dec. 8, 1999, Appl. No. 457,156

Int. Cl. B23K *9/10*

U.S. Cl. 219—137 PS **48 Claims**



1. An electric arc welding apparatus for forming a welding bead on a workpiece comprising an electric energy source, a welding circuit, an electrode and a shielding gas source, said electric energy source including a plurality of fuel cells that provide sufficient voltage and current to said welding circuit to cause an electric arc to form between said electrode and said workpiece, said fuel cell including an anode, a cathode, at least one solid polymer proton conductor membrane positioned between the anode and cathode, an organic liquid feed, and a mechanism to pass the organic feed past said anode, said shielding gas at least partially from a gas reaction product of said fuel cell.

US 6,331,695 B1

THERMAL WARMING BLANKET FOR PATIENT TEMPERATURE MANAGEMENT

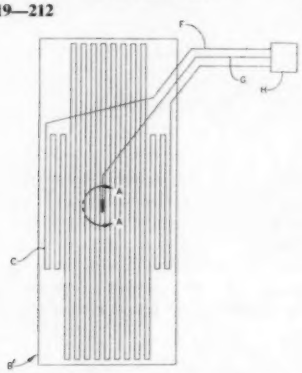
Arlen C. West, East Peoria, Ill., assignor to Wesco, Inc., East Peoria, Ill.

Continuation-in-part of application No. 09/273,907, filed on Mar. 22, 1999, now Pat. No. 6,078,026, Provisional application No. 60/079,455, filed on Mar. 26, 1998. This application Jun. 6, 2000, Appl. No. 588,393.

This patent is subject to a terminal disclaimer.

Int. Cl. H05B *3/34*

U.S. Cl. 219—212 **23 Claims**



1. A disposable blanket for one-time patient use including:

a sheet of plastic film having upper and lower sides;

a heating matrix associated with the sheet of plastic film, the heating matrix including a circuit printed on one side of the sheet of plastic film;

a cover extending over the printed circuit side of the sheet of plastic film; and

means for connecting the heating matrix to a power source.

US 6,331,696 B1

WET TISSUE WARMER AND TISSUE LIFTING PLATE

Keiichi Nakamura; Tomihisa Kaneko, and Kazunao Ogura, all of Urawa, Japan, assignors to Combi Corporation, Tokyo-To, Japan

Filed Sep. 14, 2000, Appl. No. 661,786

Claims priority, application Japan, Sep. 14, 1999, 11-260693; Sep. 14, 1999, 11-260694

Int. Cl. F24C *7/10*

U.S. Cl. 219—386 **8 Claims**

1. A wet tissue warmer for warming a wet tissue package including a wet tissue, said wet tissue warmer comprising:

a case having an open end;

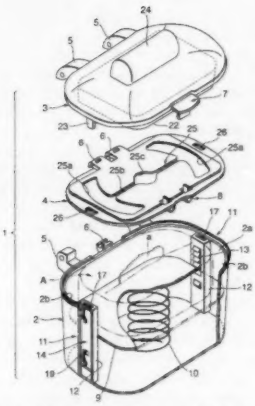
a lid removably positioned on the case so as to cover the open end of the case;

a heater disposed internally of the lid;

a lifting plate, placed in the case, for supporting a wet tissue package;

a first spring engaging the lifting plate and biasing the lifting plate upward so as to press the wet tissue package against the lid; and

movement obstructing means for obstructing upward movement of the lifting plate, the movement obstructing means including a plurality of locking members placed in the case, wherein



each of the locking members are provided with teeth capable of engaging the lifting plate.

US 6,331,697 B2

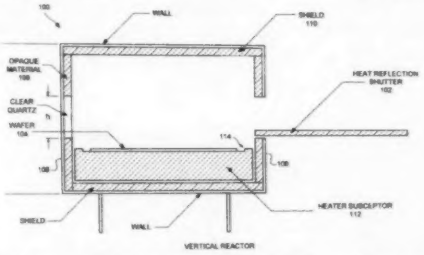
SYSTEM AND METHOD FOR RAPID THERMAL PROCESSING

Stephen E. Savas, Alameda, Calif., assignor to Mattson Technology Inc., Fremont, Calif.

Division of application No. 08/923,661, filed on Sep. 4, 1997, now Pat. No. 6,198,074, Provisional application No. 60/025,531, filed on Sep. 6, 1996. This application Jan. 4, 2001, Appl. No. 754,779.

Int. Cl. H01L *21/205*

U.S. Cl. 219—390 **11 Claims**



1. A thermal processing system for processing a semiconductor substrate comprising:

a processing chamber;

a susceptor providing a heated surface disposed within said processing chamber;

a plurality of insulating walls disposed about the periphery of said heated surface;

elevational lift pins for receiving the substrate and lowering the substrate perpendicularly to close proximity to the heated surface for processing at a desired processing temperature which is above a temperature at which the substrate is susceptible to plastic deformation;

a removable insulating cover positioned over the substrate during processing such that the insulating cover, insulating walls and heated surface form an insulated heating cavity within which the substrate is heated to the desired processing temperature;

a gas source coupled to the processing chamber to provide gas into the processing chamber;

an exhaust system coupled to the processing chamber to exhaust gas from the chamber;

wherein the gas source and the exhaust system cooperate to maintain a low initial pressure in the processing chamber;

wherein the gas source provides the gas into the processing chamber, and the gas source and the exhaust system cooperate to maintain a processing pressure in the processing chamber during processing which is higher than the initial pressure in the processing chamber;

wherein the exhaust system exhausts the gas from the processing chamber, and the gas source and the exhaust system cooperate to maintain a post-processing pressure in the processing chamber after processing which is lower than the processing pressure and which thereby reduces conductive heat transfer from the heated surface to the substrate;

wherein the insulating cover is removed after processing at the desired processing temperature such that the substrate may radiate to an environment that is substantially cooler than the desired processing temperature;

wherein the reduced conductive heat transfer and the radiation to the cooler environment cause the substrate to cool to a temperature that is less than the temperature at which the substrate is susceptible to plastic deformation; and

wherein the elevational lift pins raise the substrate perpendicularly away from the heated surface for removal from the processing chamber after processing.

US 6,331,698 B1

THERMOWELDABLE CLIP FOR CONDUITS

Werner Hintzen, Köln, Germany, assignor to Manibs Spezialarmaturen GmbH & Co. KG, Remscheid, Germany

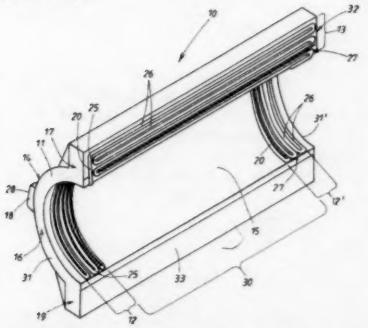
PCT No. PCT/EP98/08195, § 371 Date Jun. 15, 2000, § 102(e) Date Jun. 15, 2000, PCT Pub. No. WO99/32824, PCT Pub. Date Jul. 1, 1999

PCT Filed Dec. 14, 1998, Appl. No. 581,668

Claims priority, application Germany, Dec. 20, 1997, 297 22 603 U

Int. Cl. F16L *47/02;* **B29C** *65/34*

U.S. Cl. 219—535 **5 Claims**



1. Clip of thermoweldable material (11) for a conduit also comprised of weldable material, comprised of at least two shells (**10**) surrounding the conduit in the position of use, and wherein the shells (**10**) have longitudinal flanges (**17**, **19**) facing one another in pairs in the position of use, which can be connected to one another under pressure, wherein the shells (**10**) have at least one electrically heatable conductor (**21**) arranged in continuous windings (**25**) at inner surfaces (**15**) of the shells (**10**), and wherein the windings (**25**) of the conductor (**20**) extend, on the one hand, only in a semi-circular zone (**12**, **121**) at the inner surfaces (**15**) in two end areas (**31**, **31'**) of the shell (**10**), respectively, and, on the other hand, extend also between these two semi-circular zones (**12**, **12'**) in a planar strip (**13**),

wherein

the shells (**10**) with respect to their shape and the arrangement of the conductor (**21**) are the same or identical, and for a paired use of the shells (**10**) in the clip are positioned so as to face one another and rotated relative to one another, wherein the strip (**13**) is arranged only at the inner surface (**32**) of one of the longitudinal flanges (**17**), and electrical terminals (**18**, **28**) are provided which are formed integrally on the outer side (**14**) of each shell (**10**), wherein the conductor (**21**) projects with a part of its cross-section (**22**) from the contact surface (**15**, **32**) of the semi-circular zones (**12**, **12'**) on the shell or the strip (**13**) on the longitudinal flange, and a positive locking connection is provided between the conductor (**21**) and the material of the shell (**10**).

US 6,331,699 B1

MICROWAVE HEATING APPARATUS REQUIRING REDUCED POWER IN A STANDBY STATE

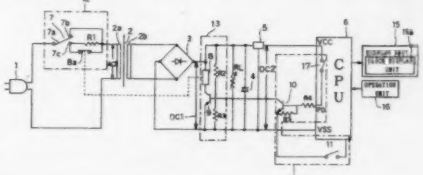
Kohei Ito, Izumi; Hideaki Otani, Tondabayashi; Tomoko Ota, Neyagawa, and Sakae Kondou, Kashiwara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 11, 1999, Appl. No. 373,082

Claims priority, application Japan, Nov. 19, 1998, 10-328953; Nov. 25, 1998, 10-333707

Int. Cl. H05B *6/66*

U.S. Cl. 219—715 **16 Claims**



1. A microwave heating apparatus comprising:

a load;

a control circuit for controlling and driving the load;

a power source for supplying electric power to the load and the control circuit; and

a transformer for stepping down a voltage of the electric power supplied from the power source to the load and the control circuit,

wherein the microwave heating apparatus is operable in at least a first mode and a second mode, wherein the second mode is a standby mode where a relatively small amount of electric power is supplied to the load and the control circuit as compared with the first mode,

wherein a voltage applied to a primary coil of the transformer is lower in the second mode than in the first mode, and

wherein upon completion of a heating operation, the second mode is automatically established.

US 6,331,700 B1

DETECTOR ARRAY VARIABLE GAIN AMPLIFIERS FOR USE IN A LASER IMAGING APPARATUS

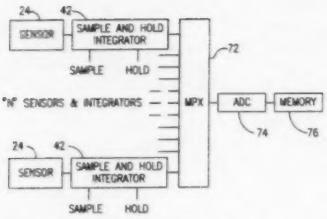
Robert H. Wake, Sunrise; Richard J. Grable, Plantation, both of Fla., and Sastry L. A. Kasibhatla, University Heights, Ohio, assignors to Imaging Diagnostic Systems, Inc., Plantation, Fla.

Division of application No. 08/979,328, filed on Nov. 26, 1997, now Pat. No. 6,150,649, Provisional application No. 60/032,590, filed on Nov. 29, 1996, Provisional application No. 60/032,591, filed on Nov. 29, 1996, Provisional application No. 60/032,592, filed on Nov. 29, 1996, Provisional application No. 60/032,593, filed on Nov. 29, 1996, Provisional application No. 60/032,594, filed on Nov. 29, 1996. This application Nov. 15, 2000, Appl. No. 712,244.

Int. Cl. H03G *3/30;* **H01N** *1/04*

U.S. Cl. 250—208.1 **3 Claims**

1. A method for collecting data for use in image reconstruction of an object being scanned, comprising the steps of:



a) providing a plurality of detectors disposed in an arc around the object to be scanned;

b) connecting an integrating amplifier to each detector;

c) impinging a laser beam at a point on the object;

d) integrating the input to each integrating amplifier at several time intervals;

e) recording each output at each integration interval for use in image reconstruction;

f) orbiting the detectors and the laser beam to another point on a circle; and

g) repeating steps (c)–(f) until a complete circle has been traversed.

US 6,331,701 B1

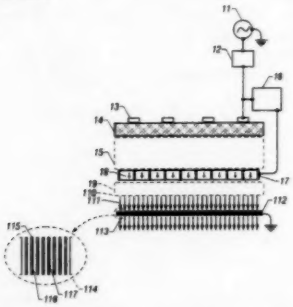
RF-GROUNDED SUB-DEBYE NEUTRALIZER GRID

Lee Chen, 1121 Strickland Dr., Austin, Tex. 78748, and Chen Yvonne, 12805 Decoy Cove, Austin, Tex. 78729

Provisional application No. 60/086,091, filed on May 20, 1998. This application May 20, 1999, Appl. No. 315,456.

Int. Cl. H05H *3/02*

U.S. Cl. 250—251 **16 Claims**



1. An RF-grounded sub-Debye neutralizer grid that is suitable for use in a plasma reactor and with a plasma beam, comprising:

a grid core that is RF-grounded;

a plurality of grid holes, said grid holes are within said grid core;

each grid individual hole of said plurality of grid holes further comprises a sub-Debye hole wherein the diameter of said sub-Debye hole is smaller than the sheath thickness of the plasma and wherein said sub-Debye hole has a high aspect ratio; and

an inner surface of said each individual grid hole of said plurality of grid holes that forms a natural ceramic in the presence of the plasma, said inner surface produces a surface neutralization by shallow angle elastic surface forward scattering.

US 6,331,702 B1

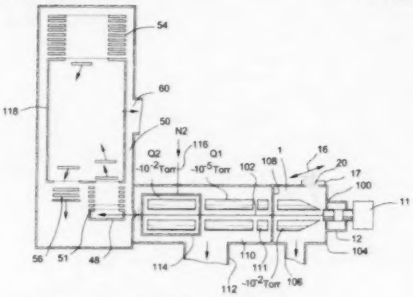
SPECTROMETER PROVIDED WITH PULSED ION SOURCE AND TRANSMISSION DEVICE TO DAMP ION MOTION AND METHOD OF USE

Andrew N. Krutchinsky, New York, N.Y.; Alexandre V. Loboda, Winnipeg, Canada; Victor L. Spicer, Winnipeg, Canada; Werner Ens, Winnipeg, Canada, and Kenneth G. Standing, Winnipeg, Canada, assignors to University of Manitoba, Canada

Filed Jan. 25, 1999, Appl. No. 236,376

Int. Cl. H01J *49/40*

U.S. Cl. 250—281 **33 Claims**



1. A mass spectrometer system comprising:

a mass spectrometer;

a pulsed ion source for providing a plurality of plumes, each plume having a plurality of analyte ions; and

an ion transmission device containing a damping gas and having at least one RF ion guide disposed on an ion path leading to the mass spectrometer, the damping gas providing collision damping on the analyte ions and the RF ion guide providing ion confinement along the ion path, such that each plume is spread into a significantly broadened and continuous packet of ions along the ion path.

US 6,331,703 B1

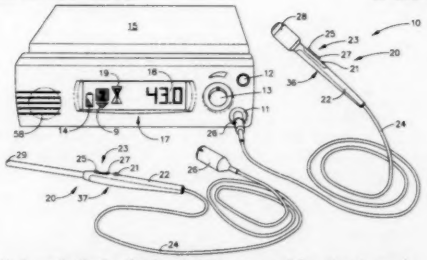
GUIDANCE METHOD FOR RADIATION DETECTION

Stephen T. Yarnall, Poway, Calif., and Mark W. DiFrancesco, Loveland, Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed Mar. 12, 1999, Appl. No. 266,961

Int. Cl. A61B *5/02*

U.S. Cl. 250—336.1 **11 Claims**



1. A method of radiation detection comprising the steps of:

a) generating radiation decay rate counts wherein said counts comprise a sum of detection radiation decay evens over a time interval;

b) loading said counts into an array;

c) summing selected elements of said array to generate a total count and a plurality of candidate counts;

d) comparing said total count to one of said candidate counts to determine whether said one of said candidate counts is statistically different from said total count;

e) using said statistically different one of said candidate counts as an output count rate;

f) generating an output signal using said output count rate to determine the characteristics of said output signal;

g) partitioning said plurality of candidate counts into: a last count value at priority **1**; a sum of the last two count values at priority **2**; a sum of the last four count values at priority **3**; a sum of the last eight count values at priority **4**; said total count at priority **5**; and

h) selecting said one said candidate counts as the highest priority count value that is a statistically significant change from priority **5** said total count.

US 6,331,704 B1

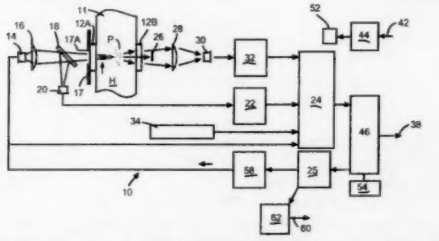
HYDRAULIC FLUID CONTAMINATION MONITOR

Allan B. Owen, Exton, Pa., assignor to Vickers, Incorporated, Maumee, Ohio

Provisional application No. 60/072,985, filed on Jan. 20, 1998. This application Nov. 16, 1998, Appl. No. 193,067.

Int. Cl. G01N *33/26*

U.S. Cl. 250—339.11 **31 Claims**



1. Apparatus for detecting particulate debris in hydraulic fluid flowing in a fluid flow system of operating equipment comprising

(a) a fluid flow line for directing the flow of hydraulic fluid, said fluid flow line having a section permitting the transmission of light therethrough;

(b) a source of light directed toward said section for transmission through said section and through hydraulic fluid or oil flowing through said section;

(c) a light detector positioned to receive light from said light source passing through said flow line section and hydraulic fluid flowing therethrough while said equipment is operating;

(d) a trap located outside of said flow line section positioned between said flow line section and said detector, said trap having a size preventing the direct passage of said light to said detector while permitting scattered portions of said light to reach said detector; and

(e) an alarm responsive to a decrease in the amount of light reaching said detector.

US 6,331,705 B1

ROOM TEMPERATURE SOLID STATE GAMMA OR X-RAY DETECTORS

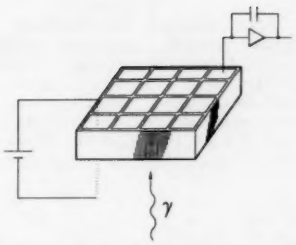
Yosef Eisen, Rishon LeZion, and Asher Shor, Jerusalem, both of Israel, assignors to State of Israel, Atomic Energy Commission, Yavne, Israel

Continuation-in-part of application No. PCT/IL98/00215, filed on May 8, 1998. This application Nov. 8, 1999, Appl. No. 435,482.

Claims priority, application Israel, May 8, 1997, 120807; Nov. 11, 1998, 126992

Int. Cl. G01T *1/24*

U.S. Cl. 250—370.01 **30 Claims**



21. An array of detectors comprising a plurality of individual detectors, each individual detector comprising an individual detector material of a given detector material quality and having an individual thickness; wherein a separate detector voltage that substantially compensates for incomplete charge collection is applied to each said individual detector; said separate detector voltage causing controlled electron trapping in each said individual detector.

US 6,331,706 B1

COLLECTION OF IONS

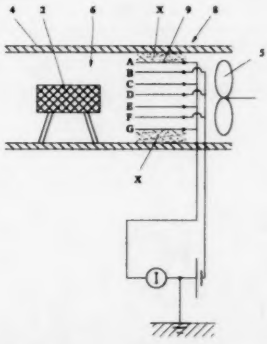
Christopher Henry Orr; Craig Janson Luff; Thomas Dockray, all of Calderbridge, United Kingdom; Duncan Whittemore Macarthur, Los Alamos, N. Mex.; John Alan Bounds, Los Alamos, N. Mex., and James E. Koster, Los Alamos, N. Mex., assignors to British Nuclear Fuels PLC, Cheshire, United Kingdom, and The Regents of the University of California, Oakland, Calif.

Filed May 7, 1999, Appl. No. 307,371

Claims priority, application United Kingdom, May 8, 1998, 9809756

Int. Cl. G01T *1//18*

U.S. Cl. 250—385.1 **14 Claims**



1. Apparatus for detecting ions, the apparatus comprising a plurality of electrodes, the electrodes being spaced from one another and configured with a first outer electrode and a second outer electrode and an odd number of intermediate electrodes provided there between, the outer electrodes and alternate intermediate electrodes being electrically connected to a source of electrical potential and to current measuring means, the electrode(s) adjacent the outer electrodes and other alternate electrodes being grounded.

US 6,331,707 B1

ELECTROSTATIC MONITORING

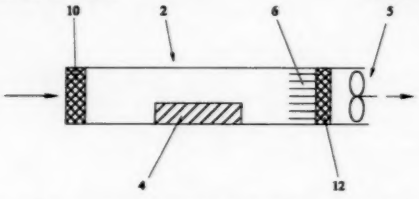
Christopher Henry Orr; Craig Janson Luff; Thomas Dockray, all of Cumbria, United Kingdom, and Duncan Whittemore Macarthur, Los Alamos, N. Mex., assignors to British Nuclear Fuels PLC, Cheshire, United Kingdom, and Regents of the University of California, Oakland, Calif.

Filed May 7, 1999, Appl. No. 307,226

Claims priority, application United Kingdom, May 8, 1998, 9809745

Int. Cl. G01T *1/18*

U.S. Cl. 250—387 **22 Claims**



1. An instrument for monitoring alpha and/or beta emitting sources on an item or location, the item or location being in contact with a medium, alpha and/or beta emissions generating ions in the medium, the instrument comprising:

a container bounding a detecting chamber, the detecting chamber being configured to selectively receive the item or location so that the item or location is sealed in a substantially air-tight fashion within the detecting chamber;

an electrode disposed within the detecting chamber, the electrode being adapted to receive an electrical potential so that the electrode electrostatically attracts the ions generated by the alpha and/or beta emissions when the medium and the item or location are sealed in the substantially air-tight fashion within the detecting chamber; and

means for monitoring ions discharged and/or collected on the electrode.

US 6,331,708 B2

EXAMINING A DIAMOND

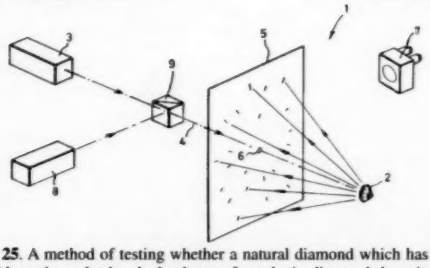
Martin Phillip Smith, Wargrave, United Kingdom, assignor to Gersan Establishment, Liechtenstein

Continuation of application No. 09/011,342, filed as application No. PCT/GB96/01752, filed on Jul. 22, 1996, now abandoned. This application Jan. 19, 2001, Appl. No. 766,338.

Claims priority, application United Kingdom, Jul. 24, 1995, 9515144

Int. Cl. G01N *21/56*

U.S. Cl. 250—483.1 **25 Claims**



25. A method of testing whether a natural diamond which has a table and a culet has had a layer of synthetic diamond deposited thereon, comprising:

directing a beam of ultraviolet radiation substantially of wavelength substantially in the range 230 nm to 320 nm towards said table in a direction substantially normal to said table, so as to form a pattern of beams of radiation due to refraction and reflection of the irradiating ultraviolet radiation;

observing the pattern of beams of ultraviolet radiation substantially of wavelength substantially in the range 230 nm to 320 nm;

directing a beam of visible radiation towards said table in a direction substantially normal to said table, so as to form a pattern of beams of radiation due to refraction and reflection of the irradiating visible radiation;

observing the pattern of beams of visible radiation so produced;

directing a beam of ultraviolet radiation substantially of wavelength substantially in the range 230 nm to 320 nm towards said culet, so as to form a pattern of beams of radiation due to refraction and reflection of the irradiating ultraviolet radiation;

observing the pattern of beams of ultraviolet radiation substantially of wavelength substantially in the range 230 nm to 320 nm; and

distinguishing from said patterns of reflected and refracted radiation whether the diamond is a completely natural diamond, is a diamond with a layer of synthetic diamond deposited on the culet, or is a diamond with a layer of synthetic diamond deposited on the table.

US 6,331,709 B1

ALIGNMENT MARK DETECTION METHOD, AND ALIGNMENT METHOD, EXPOSURE METHOD AND DEVICE, AND DEVICE PRODUCTION METHOD MAKING USE OF THE ALIGNMENT MARK DETECTION METHOD

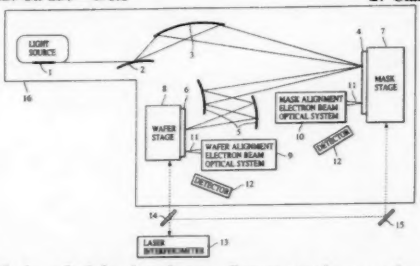
Mitsuaki Amemiya, Utsunomiya, and Masami Tsukamoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1996, Appl. No. 725,400

Claims priority, application Japan, Oct. 6, 1995, 7-260092

Int. Cl. H01J *37/30*

U.S. Cl. 250—491.1 **27 Claims**



1. A method for detecting an alignment mark on a substrate using an electron beam, comprising the steps of:

changing an accelerating voltage of the electron beam in accordance with at least one of thickness and material type of a layer structure of the substrate, and thickness and material type of the alignment mark on the substrate;

irradiating the substrate with the electron beam accelerated to each said changed accelerating voltage;

detecting at least one of fluorescent X-rays, secondary electrons and backscattered electrons from the substrate irradiated with the electron beam and generating a corresponding detection result;

selecting the detection result from the substrate irradiated with the electron beam accelerated to an optimal accelerating voltage for at least one of the layer structure of the substrate and the alignment mark on the substrate; and

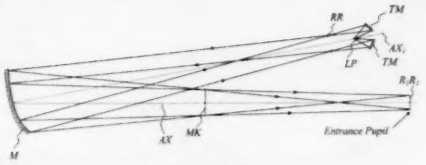
determining a position of the alignment mark based on said selected detection result,

wherein the layer structure of the substrate changes each time a cycle of a wafer forming process is repeated and the accelerating voltage is changed in accordance with the change of the layer structure.

US 6,331,710 B1
REFLECTIVE OPTICAL SYSTEMS FOR EUV LITHOGRAPHY

Zhijiang Wang, 23637 Country View Dr., Diamond Bar, Calif. 91765, and Junhua Pan, Nanjing, Banchang St. #188, Jiangsu, Switzerland

Filed Dec. 2, 1998, Appl. No. 203,712
Int. Cl. G02B *13/14*
U.S. Cl. 250—492.2 **8 Claims**



1. An imaging apparatus comprising:

a projection optical system comprising, from long to short conjugate, a first convex mirror and a second concave mirror, characterized in that said mirrors have the structural parameters meeting substantially the following relationships:

$$m_2 = \pm\sqrt{\frac{1+m^2}{2}}$$

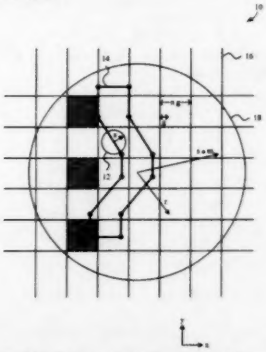
$$a = \frac{1-m+2m_2}{1+m}$$

wherein m is the reduction magnification of said projection optical system, m_2 is the magnification of the second mirror, and a is the ratio of the paraxial ray heights (h_2/h_1).

US 6,331,711 B1
CORRECTION FOR SYSTEMATIC, LOW SPATIAL FREQUENCY CRITICAL DIMENSION VARIATIONS IN LITHOGRAPHY

Matthew F. Vernon, Los Gatos, Calif., assignor to Etec Systems, Inc., Hayward, Calif.

Filed Aug. 6, 1999, Appl. No. 369,771
Int. Cl. G21G *5/00*
U.S. Cl. 250—492.2 **11 Claims**



1. A method of imaging a pattern on a sensitive substrate using a lithographic apparatus, comprising the acts of:

determining selected dimensional variations in patterning by the lithographic apparatus;

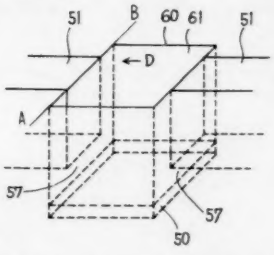
scanning the pattern onto the substrate using the lithographic apparatus at a predetermined addressing grid spacing;

additionally scanning the substrate at an addressing grid spacing greater than in the act of scanning, and at a lower intensity that in the act of scanning, thereby correcting for the determined dimensional variations.

US 6,331,712 B1
SECTION FORMATION OBSERVING METHOD

Yasuhiko Sugiyama, and Toshiaki Fujii, both of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Mar. 18, 1999, Appl. No. 271,805
Claims priority, application Japan, Mar. 19, 1998, 10-070994
Int. Cl. G21G *5/00;* **G21K** *5/10*
U.S. Cl. 250—492.21 **20 Claims**



1. A method of forming a cross-section and observing the cross-section in a sample having a first conductive layer overlying a second conductive layer with an insulating layer interposed therebetween, comprising:

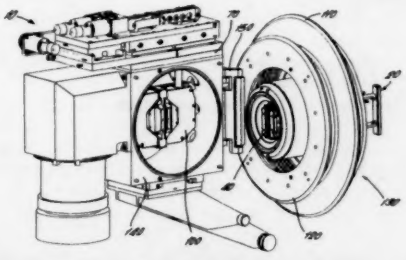
a first process of irradiating a focused ion beam and repeatedly scanning the focused ion beam across a predetermined region of the sample to form a recess having a sidewall in which at least the first conductive layer and the second conductive layer are exposed and the first conductive layer is rendered in an electrically floating state;

a second process of irradiating the focused ion beam at a region of the sample other than the predetermined region from above the first conductive layer rendered in an electrically floating state by, the first process to provide a hole extending from the first conductive layer to the second conductive layer and to electrically connect the firs conductive layer and the second conductive layer to prevent buildup of charge; and a third process of observing a desired exposed portion of the sample in the recess using a charged particle beam.

US 6,331,713 B1
MOVABLE ION SOURCE ASSEMBLY

Theodore H. Smick, Essex; Marvin Farley, Ipswich; Geoffrey Ryding, Manchester; Shu Satoh, Byfield, and Peter Rose, Rockport, all of Mass., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Oct. 6, 1999, Appl. No. 413,035
Int. Cl. G21F *5/02;5/10*
U.S. Cl. 250—497.1 **19 Claims**



1. An ion source assembly for an ion implanter comprising:

a source sub assembly including.

an ion source for generating ions to be implanted;

an extraction electrode for extracting ions from the ion source; and

a first electrical insulator arranged to support the extraction electrode relative to the ion source and to electrically insulate the said extraction electrode from the ion source;

the ion source assembly further including a chamber having a chamber wall with an inner and outer surface, and being arranged to receive ions extracted from the ion source, the chamber wall defining an exit aperture to permit exiting of the said ions to the ion implanter; wherein

the source sub assembly is movable relative to the chamber, the ion source assembly further comprising a constraining apparatus arranged to connect the chamber wall with the source sub assembly such that the source sub assembly is constrained to move along a fixed locus of points relative to the chamber to allow access to the inner wall thereof, the fixed locus of points being defined along a substantially horizontal plane.

US 6,331,714 B1

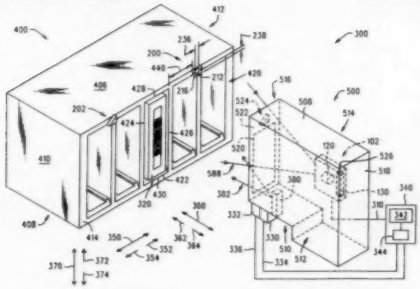
GUIDANCE SYSTEM AND METHOD FOR AN AUTOMATED MEDIA EXCHANGER

Richard Lynn Gardner, Jr., Greeley; Joseph M. White, Windsor; Matthias Albert Lester, and Richard A. Irwin, both of Fort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 13, 1999, Appl. No. 291,242

Int. Cl. G01N *21/88;* **G01B** *11/14*

U.S. Cl. 250—559.29 **28 Claims**



1. A system for determining the position of a first object relative to a second object, said system comprising:

an imaging apparatus associated with said first object said imaging apparatus including at least one photosensor and at least one optical component located along a light path extending between a point external to said imaging apparatus and said at least one photosensor;

a target associated with said second object, said target comprising a first edge and a second edge, said first edge and said second edge defining boundaries of reflective difference, wherein a first axis intersects said first edge at a first point and said second edge at a second point, and wherein the distance between said first point and said second point corresponds to a location on a second axis;

said first object being movable relative to said second object; and

said target being imagable by said imaging apparatus.

US 6,331,715 B1

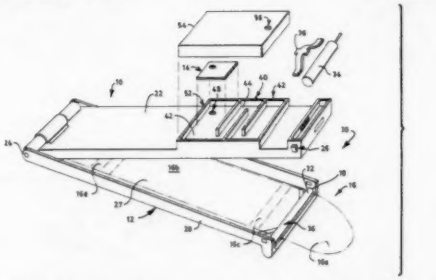
DIAGNOSTIC ASSAY SYSTEM AND METHOD HAVING A LUMINESCENT READOUT SIGNAL

Donald E. Mauchan, Marlboro, and Philip R. Norris, North Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Provisional application No. 60/104,150, filed on Oct. 14, 1998. This application Oct. 6, 1999, Appl. No. 412,845.

Int. Cl. G01N *21/86*

U.S. Cl. 250—559.4 **18 Claims**



1. The method includes the steps of: providing a self-contained processor having a luminescent testing material capable of generating a read-out signal in response to contact with a reagent of interest in a test sample; providing a film assemblage of the self-developing type having a portion to be exposed and a leader extending from the processor; introducing the test sample into the processor so as that a reagent of interest can cooperate with the test material; exposing the exposable portion of the self-developing film type retained in a light-tight enclosure in the processor to a luminescent reaction of the reagent of interest and the test material; and, initiating development of the exposed portion by passing the exposable portion through pressure applying processing means in the processor and withdrawing the exposed portion from the enclosure by pulling on the film leader.

US 6,331,716 B1

VARIABLE CAPACITY DEVICE WITH QUANTUM-WAVE INTERFERENCE LAYERS

Hiroyuki Kano, Aichi-ken, Japan, assignor to Canare Electric Co., Ltd., Aichi-gun, Japan

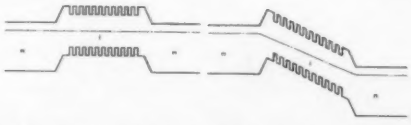
Filed Feb. 5, 1999, Appl. No. 245,299

Claims priority, application Japan, Feb. 6, 1998, 10-041073; Feb. 24, 1998, 10-060494

This patent is subject to a terminal disclaimer.

Int. Cl. H01L *29/06*

U.S. Cl. 257—14 **12 Claims**



1. A variable capacity device having an nin or pip junction, comprising:

an i-layer having a quantum-wave interference layer which has plural periods of a pair of a first layer and a second layer, said second layer having a wider band gap than said first layer;

wherein the thickness of said first layer (D_w) is determined by the equation:

$$D_w = n_w \lambda_w \lambda_w / 4,$$

where n_w is an odd number and λ_w is a quantum-wave wavelength of carriers injected in the first layer given by the equation:

$\lambda_W=h/(2m_W(E+V))^{1/2}$,

where h is Plank's constant, m_W is the effective mass of said carriers in said first layer, V is a difference in carrier potential energy between said second layer and said first layer, E is the kinetic energy of carriers in said second layer and $E \leqq V/9$;

the thickness of said second layer (D_B) is determined by the equation:

$D_B=n_B\lambda_B/4$,

where n_B is an odd number and λ_B is a quantum-wave wavelength of carriers injected in the second layer given by the equation:

$\lambda_B=h/(2m_B E)^{1/2}$,

where m_B is the effective mass of said carriers in said second layer; and

the carriers in said first and second layers are selected from the group consisting of electrons and holes.

US 6,331,717 B1

INSULATED GATE SEMICONDUCTOR DEVICE AND PROCESS FOR FABRICATING THE SAME

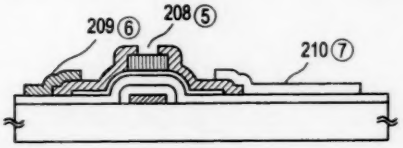
Yasuhiko Takemura, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co. Ltd., Japan

Division of application No. 08/942,440, filed on Oct. 1, 1997, which is a continuation of application No. 08/620,245, filed on Mar. 22, 1996, now abandoned, which is a division of application No. 08/286,290, filed on Aug. 5, 1994, now Pat. No. 5,530,265. This application Dec. 22, 1998, Appl. No. 218,091.

Claims priority, application Japan, Aug. 12, 1993, 5-220594

Int. Cl. H01L *29/72*

U.S. Cl. 257—51 **54 Claims**



1. A semiconductor device comprising:

a gate electrode formed over a substrate;

a gate insulating film formed over said gate electrode;

a semiconductor film comprising silicon formed on said gate insulating film;

a coating formed on said semiconductor film;

a pair of impurity regions in said semiconductor film and a channel forming region extending between said pair of impurity regions wherein boundaries between said channel forming region and said pair of impurity regions are aligned with side edges of said coating, wherein crystallinity of said pair of impurity regions is increased by irradiating at least one of visible light and near infrared light thereto.

US 6,331,718 B1

THIN FILM CIRCUIT WITH IMPROVED CARRIER MOBILITY

Shunpei Yamazaki, Tokyo; Jun Koyama, and Hisashi Ohtani, both of Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

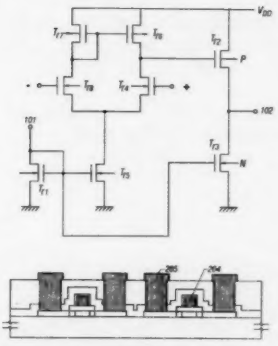
Filed Dec. 29, 1997, Appl. No. 998,791

Claims priority, application Japan, Dec. 30, 1996, 8-358957

Int. Cl. H01L *27/092;27/12*

U.S. Cl. 257—64 **30 Claims**

1. A semiconductor device which has a group of operational amplifier circuits formed on an insulating surface:



said operational amplifier circuits comprising a combination of at least n-channel type thin film transistors and p-channel type thin film transistors;

wherein cumulative distribution of mobilities of said n-channel type thin film transistors becomes 90% or more at 260 cm^2/Vs; and

wherein cumulative distribution of mobilities of said p-channel type thin film transistors becomes 90% or more at 150 cm^2/Vs.

US 6,331,719 B2

SEMICONDUCTOR DEVICE FOR REDUCING EFFECTS OF NOISE ON AN INTERNAL CIRCUIT

Tsukasa Ooishi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

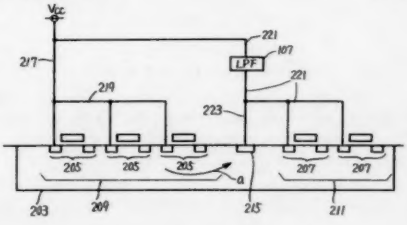
Continuation of application No. 08/626,406, filed on Apr. 2, 1996, now Pat. No. 5,844,262. This application Oct. 22, 1998, Appl. No. 176,893.

Claims priority, application Japan, May 25, 1995, 7-126726

This patent is subject to a terminal disclaimer.

Int. Cl. H01L *27/10*

U.S. Cl. 257—207 **8 Claims**



1. A semiconductor device, comprising:

an internal potential generator disposed to generate an internal potential;

a first line connected to said internal potential generator and providing said internal potential;

a second line providing said internal potential; and

a transistor connected between said first line and second line and being turned on/off in response to its gate potential.

US 6,331,720 B1

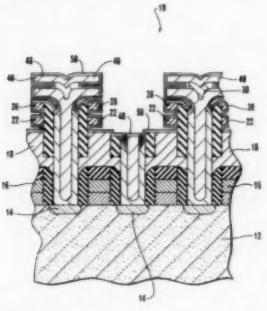
ELECTRICALLY CONDUCTIVE STRUCTURE

Kunal R. Parekh, Boise; Zhiqiang Wu, and Li Li, both of Meridian, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Division of application No. 08/887,744, filed on Jul. 3, 1997, now Pat. No. 6,027,967. This application Feb. 22, 2000, Appl. No. 511,514.

Int. Cl. H01L *27/08;29/76;29/94;31/119;21/8242*

U.S. Cl. 257—308 **31 Claims**



1. An electrically conductive structure such as a capacitor, comprising:

a semiconductor substrate having two insulated raised features projecting therefrom and an active area within said semiconductor substrate disposed therebetween;

a layer of electrically insulating material disposed upon said two insulated raised features; and

a formation comprising a first fin extending structure having a doped material, and a second fin extending structure having a doped material, wherein

said first fin extending structure has at least one fin extending from a spacer material situated above said insulated raised features,

said second fin extending structure has at least one fin forming an end of a layer extending above of and between said insulated raised features, and

such that said first fin extending structure is below said second fin extending structure of said electrically conductive structure.

US 6,331,721 B1

MEMORY CELL WITH BUILT IN ERASURE FEATURE

Kuo-Tung Sung, 1F, #34, Lane 376, Section 1, Kuang-Fu Road, Hsin-Chu; Wen-Ting Chu, #668, Chung-Cheng Road, Allen, Kaosiung County, and Huoy-Jong Wu, No. 39 Lane 107, Sung-Chu Road, Taichung, all of Taiwan

Division of application No. 08/916,758, filed on Aug. 19, 1997, now Pat. No. 5,963,806. This application Mar. 5, 1999, Appl. No. 264,210.

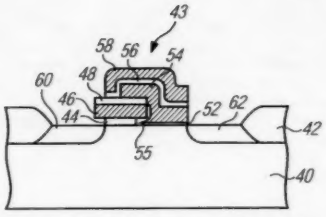
Claims priority, application Taiwan, Dec. 9, 1996, 85115219 A

Int. Cl. H01L *29/788*

U.S. Cl. 257—317 **16 Claims**

1. A semiconductor memory device fabricated in accordance with a process comprising the steps of:

forming a plurality of insulation regions on a semiconductor substrate to define at least one active region on the substrate;



forming a first insulating layer at said active region;

forming a patterned first silicon layer on a portion of said first insulating layer;

forming a patterned second insulating layer overlying at least a portion of said first silicon layer;

forming a recess in said first insulating layer underneath said first silicon layer by removing portions of said first insulating layer between said first silicon layer and said substrate, said recess exposing portions of said substrate and said first silicon layer;

forming a patterned third insulating layer on said exposed portions of said substrate and said first silicon layer, said third insulating layer partially filling said recess;

forming a patterned second silicon layer covering at least a portion of said third insulating layer and further filling said recess;

forming a patterned fourth insulating layer on at least a portion of said second silicon layer; and

forming a patterned third silicon layer on at least a portion of said fourth insulating layer.

US 6,331,722 B1

HYBRID CIRCUIT AND ELECTRONIC DEVICE USING SAME

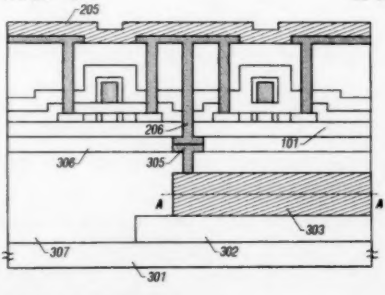
Shunpei Yamazaki, Tokyo, and Satoshi Teramoto, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Jan. 16, 1998, Appl. No. 8,098

Claims priority, application Japan, Jan. 18, 1997, 9-019802; Jan. 20, 1997, 9-022078

Int. Cl. H01L *29/72*

U.S. Cl. 257—347 **41 Claims**



1. A hybrid circuit comprising:

a substrate having an insulating surface on which at least one TFT is fabricated;

a laminated device disposed under said TFT with said substrate interposed therebetween; and

terminals piercing said substrate and connecting said TFT with said laminated device.

US 6,331,723 B1

ACTIVE MATRIX DISPLAY DEVICE HAVING AT LEAST TWO TRANSISTORS HAVING LDD REGION IN ONE PIXEL

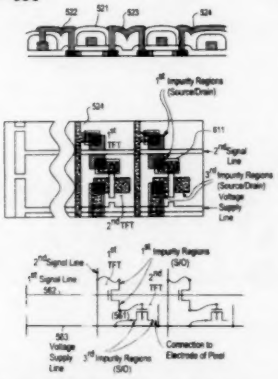
Shunpei Yamazaki, Tokyo; Yasuhiko Takemura, and Hongyong Zhang, both of Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Japan

Division of application No. 08/209,063, filed on Mar. 11, 1994, now Pat. No. 5,913,112, which is a division of application No. 07/933,810, filed on Aug. 24, 1992, now Pat. No. 5,308,998, which is a continuation-in-part of application No. 07/846,164, filed on Mar. 5, 1992, now Pat. No. 5,289,030. This application Aug. 21, 1998, Appl. No. 137,527.

Claims priority, application Japan, Aug. 26, 1991, 3-238713; Jan. 21, 1992, 4-30220

Int. Cl. H01L *27/01;27/12;31/0392;29/04;31/036*

U.S. Cl. 257—351 **124 Claims**



1. An active matrix display device comprising:

a substrate having an insulating surface;

a first signal line;

a first thin film transistor having a first channel region interposed between a first pair of impurity regions, and a second pair of impurity regions between said first channel region and said first pair of impurity regions formed in a first semiconductor film over said substrate wherein a first gate electrode of said first thin film transistor is connected to said first signal line;

a second signal line extending across said first signal line wherein said second signal line is connected to one of said first pair of impurity regions of said first thin film transistor;

a second thin film transistor having a second channel region interposed a third pair of impurity regions, and a fourth pair of impurity regions between said second channel region and said third pair of impurity regions formed in a second semiconductor film over said substrate wherein a second gate electrode of said second thin film transistor is connected to the other one of said first pair of impurity regions of said first thin film transistor;

a voltage supply line formed over said substrate wherein said voltage supply line is connected to one of said third pair of impurity regions of said second thin film transistor, and

a pixel electrode formed over said substrate wherein said pixel electrode is connected to the other one of said third pair of impurity regions of said second thin film transistor.

US 6,331,724 B1

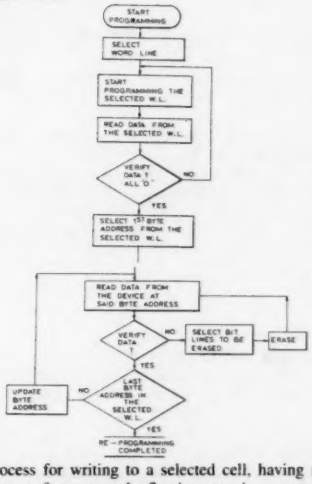
SINGLE TRANSISTOR E²PROM MEMORY DEVICE WITH CONTROLLED ERASING

James T. Chen, Cupertino, Calif., and Atsuo Yagi, Shiobara-machi, Japan, assignors to Nippon Precision Circuits, Inc., Tokyo, Japan

Continuation of application No. 08/559,800, filed on Nov. 17, 1995, now Pat. No. 5,773,861. This application Dec. 23, 1997, Appl. No. 997,407.

Int. Cl. H01L *29/76;29/94;31/062;31/119*

U.S. Cl. 257—365 **8 Claims**



1. A process for writing to a selected cell, having source and drain regions, a first gate and a floating gate, in a memory array of a single transistor E²PROM device known as a flash memory comprising a plurality of memory cells interconnected by a plurality of word lines, a plurality of bit lines orthogonal to said word lines, and a plurality of common source lines comprising the steps of:

identifying the word line and bit line connected to the selected cell of said flash memory;

flash programming the cells of said flash memory connected to said identified word line, said programming comprising applying a voltage to said identified word line which is higher than the voltage on said substrate; and

controlled erasing said selected cell of said flash memory, said controlled erasing comprising applying a voltage to said identified bit line which is higher than the voltage on said selected word line, sensing the current on the selected cell and controlling the application of said voltage in response to a value of said sensed current.

US 6,331,725 B1

INTEGRATED CIRCUITRY

Charles H. Dennison, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

Division of application No. 08/622,591, filed on Mar. 26, 1996, now abandoned. This application Oct. 16, 1997, Appl. No. 951,854.

Int. Cl. H01L *29/76*

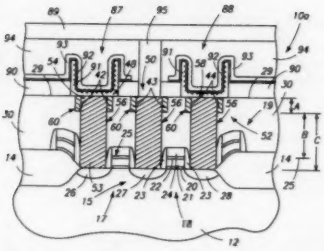
U.S. Cl. 257—368 **7 Claims**

1. Integrated circuitry comprising:

a node location;

an electrically conductive longitudinal contact pedestal in electrical connection with the node location, the contact pedestal comprising:

an inner longitudinal portion in electrical connection with the node location and an outer longitudinal portion, the outer longitude portion comprising a sidewall spacer and an



electrically conductive pillar, the spacer being electrically conductive and in ohmic electrical connection with the pillar

the pillar and spacer having a substantially coplanar common outer surface; and

insulating dielectric material having a substantially planar outer surface which is substantially coplanar with the contact pedestal common outer surface and a portion of the insulating dielectric material is intermediate the node location and the spacer.

US 6,331,726 B1

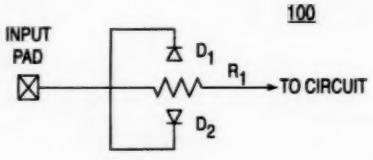
SOI VOLTAGE DEPENDENT NEGATIVE-SATURATION-RESISTANCE RESISTOR BALLASTING ELEMENT FOR ESD PROTECTION OF RECEIVERS AND DRIVER CIRCUITRY

Steven H. Voldman, So. Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 21, 2000, Appl. No. 532,128

Int. Cl. H01L *29/00;23/62*

U.S. Cl. 257—541 **24 Claims**



1. A circuit comprising a device for limiting a current, further comprising:

a current path having a cross section for passing the current therethrough; and

a pinching means responsive to an applied voltage for reducing the cross section as an amplitude of the applied voltage increases.

US 6,331,727 B1

SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING THE SAME

Hiroomi Nakajima, Yokohama, and Toshihiro Sakamoto, Kitakyushu, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 6, 1999, Appl. No. 369,470

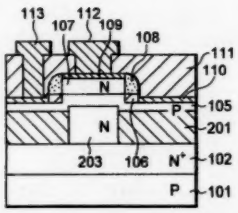
Claims priority, application Japan, Aug. 7, 1998, 10-223865; Aug. 31, 1998, 10-245431; Jul. 23, 1999, 11-209064

Int. Cl. H01L *29/78;27/102;27/082*

U.S. Cl. 257—587 **8 Claims**

1. A semiconductor device comprising:

a semiconductor substrate of one conductivity type having a semiconductor layer of an opposite conductivity type from an upper surface to a first depth;



a collector layer of the opposite conductivity type formed on the surface of said semiconductor substrate;

a base extraction electrode of one conductivity type formed on a surface of said collector layer and having a hole formed to a second depth; and

an emitter extraction electrode of the opposite conductivity type buried in said hole of said base extraction electrode with an insulating film being formed on side surfaces of said hole,

wherein an end portion of said emitter extraction electrode does not extend to an edge of said hole in said base extraction electrode.

US 6,331,728 B1

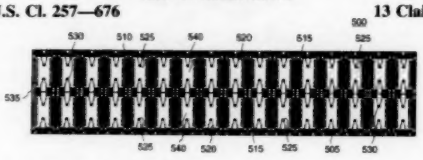
HIGH RELIABILITY LEAD FRAME AND PACKAGING TECHNOLOGY CONTAINING THE SAME

Bo Soon Chang, Cupertino; Vani Verma, Sunnyvale, both of Calif., and Anthony Odejar, Laguna, Philippines, assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Feb. 26, 1999, Appl. No. 259,482

Int. Cl. H01L *23/495*

U.S. Cl. 257—676 **13 Claims**



1. A lead frame comprising:

a first side rail;

a second side rail spaced apart from said first side rail;

a center rail disposed between said first side rail and said second side rail;

a plurality of package locations, each package location comprising:

a first die attach paddle to support a first side of a semiconductor die, the first die attach paddle being coupled only to one of said first and second side rails; and

a second die attach paddle to support a second side of the semiconductor die, the second die attach paddle being coupled only to said center rail.

US 6,331,729 B1

CHIP SUPPORTING SUBSTRATE FOR SEMICONDUCTOR PACKAGE, SEMICONDUCTOR DEVICE, AND METHOD FOR MANUFACTURING THEM

Masami Yusa, Shimodate; Toshihiko Kato; Fumio Inoue, both of Tsukuba, and Shigeki Ichimura, Oyama, all of Japan, assignors to Hitachi Chemical Company, Ltd., Japan

PCT No. PCT/JP97/03923, § 371 Date Aug. 10, 1999, § 102(e) Date Aug. 10, 1999, PCT Pub. No. WO98/19338, PCT Pub. Date May 7, 1998

PCT Filed Oct. 29, 1997, Appl. No. 297,296

Claims priority, application Japan, Oct. 30, 1996, 8-288606

Int. Cl. H01L *23/40*

U.S. Cl. 257—678 **3 Claims**

1. A semiconductor-chip supporting substrate for packaging comprising:

an insulating supporting substrate having at least one through-hole as a vent hole, said through-hole being disposed directly under a semiconductor chip and defining an inner side surface of the substrate;

at least two wirings being disposed on one surface of said insulating supporting substrate and having a semiconductor chip mounting region; and

an insulating film adhesive material provided on the surface of said semiconductor chip mounting region,

wherein said insulating film adhesive material has a glass transition temperature of 100° C. or above and a residual volatile component of 2.0% (weight by weight) or less at the time when a semiconductor chip is mounted via the insulating film adhesive material; and

wherein a bottom surface of the insulating film adhesive material, said inner side surface of said substrate and an inner side surface of said wirings form an empty space therein which communicates to an open air through said through-hole.

US 6,331,730 B1
PUSH-IN TYPE SEMICONDUCTOR DEVICE INCLUDING HEAT SPREADER

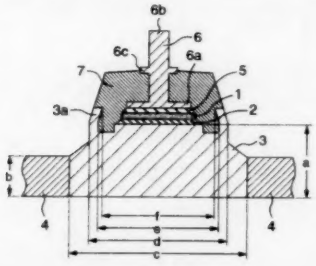
Takeshi Terasaki, Ibaraki-ken; Hideo Miura, Koshigaya; Chikara Nakajima, Kitaibaraki, and Makoto Kitano, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 22, 1999, Appl. No. 296,466

Claims priority, application Japan, Apr. 23, 1998, 10-113035

Int. Cl. H02K *19/36;* **H01L** *23/36;23/28;23/32;21/58*

U.S. Cl. 257—688 **19 Claims**



1. A semiconductor device comprising:

a semiconductor chip;

a support electrode body bonded to one of the end portions of said semiconductor chip through a first bonding member and equipped around the outer periphery thereof with a heat spreader fixing portion for supporting and fixing a heat spreader;

a lead electrode body bonded to the other end portion of said semiconductor chip through a second bonding member; and

an insulating/sealing member disposed at the bond portion between said semiconductor chip and said support electrode body and at the bond portion between said semiconductor chip and said lead electrode body,

wherein said support electrode body includes a first portion having an outer diameter different from that of said heat spreader fixing portion, and

wherein the outer diameter of said first portion is not greater than 0.95 times the outer diameter of said heat spreader fixing portion.

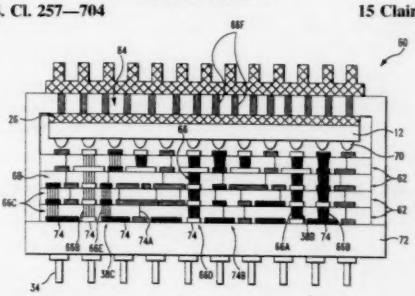
US 6,331,731 B1
COLUMN FOR MODULE COMPONENT

Kimberley Anne Kelly, Poughkeepsie, and Roy Yu, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 7, 1995, Appl. No. 568,847

Int. Cl. H01L *23/12*

U.S. Cl. 257—704 **15 Claims**



1. In a module that has a case with electrical contacts thereon and contains an integrated circuit chip and a circuit board therein which circuit board and chip have electrical connections on facing surfaces thereof formed by a controlled collapse chip contact connection method and which board has electrically conducting vias therein for the conduction of electricity to and from said connections to the electrical contacts, the improvement comprising:

columnar means formed of additional conductive vias, in said circuit board, configured for the transfer of heat in the circuit chip through the electrical connections on the facing surfaces of the circuit board and chip through the circuit board towards the case of the module; and

contact means on the interior of the case to transfer heat from the columnar means to the case.

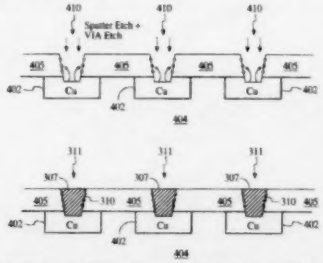
US 6,331,732 B1
VIA STRUCTURE IN AN INTEGRATED CIRCUIT UTILIZING A HIGH CONDUCTIVITY METAL INTERCONNECT AND A METHOD FOR MANUFACTURING SAME

Subhash Gupta, San Jose, and Susan Hsuching Chen, Sunnyvale, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of application No. 08/944,170, filed on Oct. 6, 1997, now Pat. No. 5,994,206. This application Nov. 12, 1999, Appl. No. 439,948.

Int. Cl. H01L *23/48*

U.S. Cl. 257—752 **6 Claims**



1. A via structure for an integrated circuit comprising:

a high conductivity metal forming a metal structure, the metal structure consisting of the high conductivity metal;

a dielectric material surrounding the high conductivity metal, the dielectric material including sidewalls to form a via hole over a base portion of the high conductivity metal; and

a via plug material other than the high conductivity metal covering the high conductivity metal and substantially filling the via hole, the via plug material substantially covering the base portion of the high conductivity metal and the sidewalls of the via hole, the via plug material for gettering the high conductivity metal sputtered on the sidewalls of the via hole.

US 6,331,733 B1

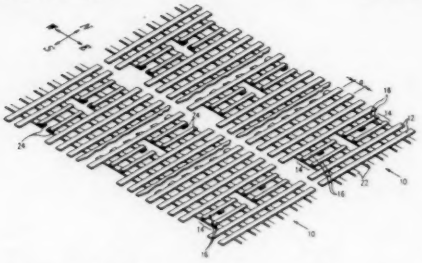
SEMICONDUCTOR DEVICE

Zvi Or-Bach, Sunnyvale, and Bill Douglas Cox, Palo Alto, both of Calif., assignors to eASIC Corporation, San Jose, Calif.

Filed Aug. 10, 1999, Appl. No. 371,031

Int. Cl. H01L *23/48;23/52;29/40*

U.S. Cl. 257—758 **28 Claims**



1. A semiconductor device comprising:

a substrate;

at least first, second and third metal layers formed over said substrate, said second metal layer comprising a plurality of generally parallel bands extending parallel to a first axis, each band comprising a multiplicity of second metal layer strips extending perpendicular to said first axis; and

at least one via connecting at least one second metal layer strip with said first metal layer underlying said second metal layer; and

wherein said third metal layer comprises at least one third metal layer strip extending generally perpendicular to said second metal layer strips and being connected thereto by a via.

US 6,331,734 B1

SEMICONDUCTOR DEVICE AND METHOD FOR MANUFACTURING THE SAME

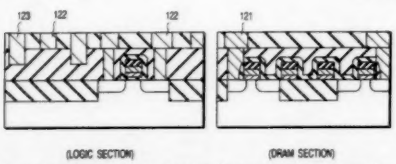
Katsuhiko Hieda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 27, 1999, Appl. No. 383,961

Claims priority, application Japan, Aug. 28, 1998, 10-243759

Int. Cl. H01L *23/485;23/522*

U.S. Cl. 257—775 **12 Claims**



1. A semiconductor device having first and second layers formed on a semiconductor substrate, comprising:

a first conductive section formed in the first layer; and

a second conductive section formed in the second layer and including a connection portion connected to the first conductive section and at least one conductive region which varies in thickness, said at least one conductive region being away from the connection portion.

US 6,331,735 B1

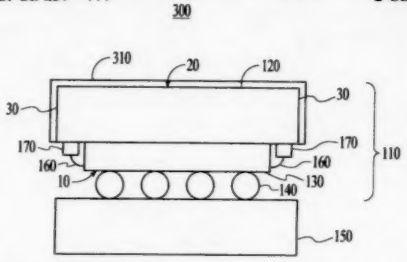
METHOD TO IMPROVE CHIP SCALE PACKAGE ELECTROSTATIC DISCHARGE PERFORMANCE AND SUPPRESS MARKING ARTIFACTS

Richard C. Blish, II, Saratoga; Colin Hatchard, Campbell, and Ian Morgan, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 25, 1998, Appl. No. 161,062

Int. Cl. H01L *23/48;23/52;29/40*

U.S. Cl. 257—777 **2 Claims**



1. A chip scale package, comprising:

(a) a die with a first side, a second side, and a plurality of edges;

(b) an electrophoretic substance which protects against electrostatic discharge on the first side of the die and on the plurality of edges but not on the second side of the die; and

(c) components on the second side of the die.

US 6,331,736 B1

UTILIZATION OF DIE REPATTERN LAYERS FOR DIE INTERNAL CONNECTIONS

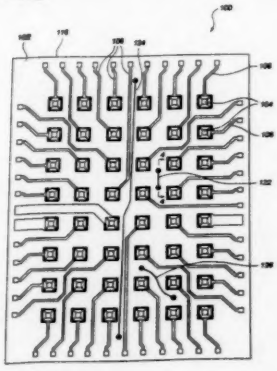
Kevin G. Duesman, Boise, and Warren M. Farnworth, Nampa, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of application No. 09/287,456, filed on Apr. 7, 1999, which is a division of application No. 09/229,373, filed on Jan. 13, 1999, now Pat. No. 6,078,100. This application Jun. 22, 2000, Appl. No. 599,752.

This patent is subject to a terminal disclaimer.

Int. Cl. H01L *23/48;23/52;29/40*

U.S. Cl. 257—778 **20 Claims**



1. A flip-chip, comprising:

a semiconductor chip including at least one active surface having internal circuitry thereunder;

a plurality of external communication traces over said at least one active surface, wherein each of said plurality of external communication traces is adapted for directing signals between said internal circuitry of said semiconductor chip and a site on said at least one active surface of said semiconductor chip for connection with external components;

a plurality of spaced apart bond pads over said at least one active surface and in electrical contact with at least some of said plurality of external communication traces;

at least one routing trace carried over an area of said at least one active surface unoccupied by said plurality of external communication traces and said plurality of spaced apart bond pads to connect a first internal circuit component to a second internal circuit component of said semiconductor chip; and

electrically conductive bumps on at least some of said plurality of spaced apart bond pads.

US 6,331,737 B1

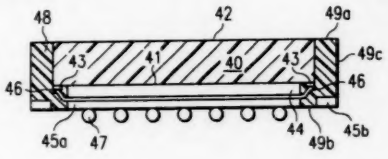
METHOD OF ENCAPSULATING THIN SEMICONDUCTOR CHIP-SCALE PACKAGES

Tiang Hock Lim, and Liang Chee Tay, both of Singapore, Singapore, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 25, 1999, Appl. No. 382,921

Int. Cl. H01L *23/28;23/52;29/40*

U.S. Cl. 257—787 **17 Claims**



1. A semiconductor device comprising:

a semiconductor chip having an outline and active and passive surfaces, said active surface having an integrated circuit including a plurality of contact pads; a plurality of electrical coupling members, each coupling member connected with one of said circuit contact pads, respectively; said electrical coupling members comprising metallic leads which are positioned on a first surface of an electrically insulating interposer and separated from said active chip surface by a compliant spacer layer having an outline substantially similar to said chip outline, and encapsulation material protecting said active chip surface and said electrical coupling members to form flat, high-luster surfaces coplanar with said passive surface of said chip while leaving said passive surface clean.

US 6,331,738 B1

SEMICONDUCTOR DEVICE HAVING A BGA STRUCTURE

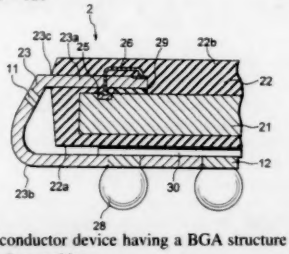
Naoto Kimura, Kumamoto, Japan, assignor to NEC Corporation, Japan

Filed Nov. 19, 1999, Appl. No. 444,232

Claims priority, application Japan, Dec. 8, 1998, 10-349200; Oct. 5, 1999, 11-283775

Int. Cl. H01L *23/48;23/52*

U.S. Cl. 257—787 **7 Claims**



1. A semiconductor device having a BGA structure comprising:

a semiconductor chip;

a connection lead connected to a pad of said semiconductor chip, said connection lead having a tip part which is bent up to a surface of said semiconductor chip on the opposite side of said pad;

a resin sealed part covering said semiconductor chip; and

a solder ball provided on said tip part of said connection lead, wherein a gap is formed between said tip part of said connection lead and said resin sealed part.

US 6,331,739 B1

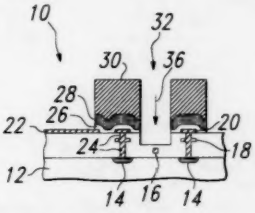
FUSE IN TOP LEVEL METAL AND IN A STEP, PROCESS OF MAKING AND PROCESS OF TRIMMING

Hideyuki Fukuhara, Ami-machi, and Shigeo Ashigaki, Tsuchiura, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of application No. 08/413,651, filed on Mar. 30, 1995, now abandoned. This application Feb. 24, 1997, Appl. No. 804,850.

Int. Cl. H01L *29/78;33/00*

U.S. Cl. 257—789 **15 Claims**



1. An integrated circuit, comprising:

A. a substrate of semiconductor material;

B. a patterned layer of polysilicon formed over and insulated from the substrate;

C. a first patterned layer of metal formed over and insulated from the patterned layer of polysilicon;

D. a top layer of patterned metal formed over the first patterned layer of metal, at least one fuse portion of the top layer of patterned metal forming a fuse link; and

E. an oxide layer formed over at least the fuse portion of the top layer of patterned metal.

US 6,331,740 B1

ENGINE GENERATOR UNIT

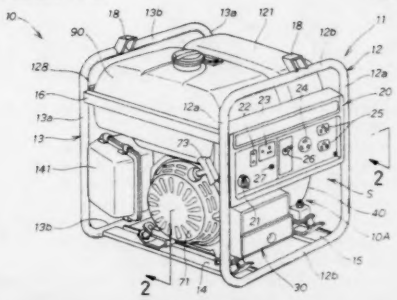
Shinichi Morohoshi, and Ryuji Tsuru, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed May 16, 2000, Appl. No. 572,746

Claims priority, application Japan, May 21, 1999, 11-142369

Int. Cl. H02K *5/00*

U.S. Cl. 290—1 A **4 Claims**



1. An engine generator unit comprising:

an engine;

an electric-power generator to be driven by said engine, said engine and said electric-power generator being provided coaxially in a direction of an engine output shaft;

a fuel tank disposed above said engine and electric-power generator;

a muffler connected to an exhaust-discharging end of said engine and positioned above said engine adjacent said fuel tank;

a heat blocking cover covering top and side portions of said muffler;

a fan cover having a generally cylindrical shape, said fan cover covering said electric-power generator and extending close to said engine; and

a cooling fan device disposed in a cooling-air inlet portion of said fan cover for introducing cooling air, from outside said engine generator unit, to said electric-power generator covered with said fan cover, an engine-cooling air passage having a cooling-air inlet portion that faces a cooling-air outlet portion of said fan cover being provided to cool an outer surface of said engine by the cooling air flowing out through the cooling-air outlet portion of said fan cover,

said engine-cooling air passage being branched to provide a muffler-cooling air passage extending between said muffler and said heat blocking cover,

whereby the cooling air is allowed to cool both said engine and said muffler after having cooled said electric-power generator.

US 6,331,741 B1

ELECTROMAGNETIC DRIVING DEVICE

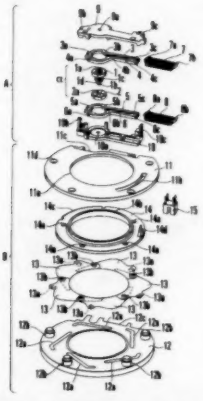
Ryuji Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1999, Appl. No. 438,489

Claims priority, application Japan, Nov. 16, 1998, 10-342376; Apr. 9, 1999, 11-102995

Int. Cl. H02K *37/00*

U.S. Cl. 310—49 R **21 Claims**



1. An electromagnetic driving device comprising:

a first permanent magnet;

a second permanent magnet arranged to be opposed to said first permanent magnet;

a rotation shaft arranged to interconnect said first permanent magnet and said second permanent magnet, said rotation shaft constituting a rotor in conjunction with said first permanent magnet and said second permanent magnet and having a rotation output part arranged to allow a rotation output to be externally taken out from between said first permanent magnet and said second permanent magnet;

a first stator yoke having magnetic poles opposed to a peripheral part of said first permanent magnet, said first stator yoke being arranged to extend from the peripheral part of said first permanent magnet toward an outside thereof;

a second stator yoke having magnetic poles opposed to a peripheral part of said second permanent magnet, said second stator yoke being arranged to extend from the peripheral part of said second permanent magnet toward an outside thereof in the same direction as the extending direction of said first stator yoke;

a first coil arranged to excite said first stator yoke, said first coil being disposed at said first stator yoke; and

a second coil arranged to excite said second stator yoke, said second coil being disposed at said second stator yoke.

US 6,331,742 B1

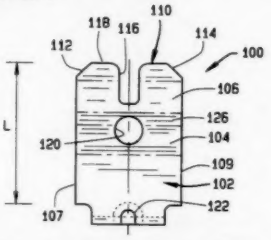
ELECTRIC MOTOR CONNECTOR MODULE

Kenneth R. Renkes, and Robert W. Damerow, both of Morrison, Ill., assignors to General Electric Company, Schenectady, N.Y.

Provisional application No. 60/114,446, filed on Dec. 31, 1998. This application Feb. 11, 1999, Appl. No. 248,479.

Int. Cl. H02K *11/00*

U.S. Cl. 310—68 C **13 Claims**



1. A module configured to couple to an electric motor having a run winding, a motor starter and a start winding, a housing enclosing the motor and having a plurality of pins extending therefrom, said module comprising:

a first electrical conductor member electrically coupled with said motor starter, said first electrical conductor member comprising a terminal comprising a connector plate comprising a first side, a second side, an upper surface and a lower surface, at least one of said upper surface and said lower surface comprising at least one raised surface, said connector plate further comprising a slot extending from a leading edge of said plate into said at least one raised surface, and said at least one raised surface extending substantially linearly between said connector plate first side and said connector plate second side.

US 6,331,743 B1

MAGNETIC FAN CLUTCH HAVING PLASTIC MEMBERS

Larry Ray Link, Frankfort, Ill., assignor to American Cooling Systems, LLC, Grand Rapids, Mich.

Continuation-in-part of application No. 08/920,569, filed on Aug. 29, 1997, now Pat. No. 5,947,248, Provisional application No. 60/095,498, filed on Aug. 6, 1998. This application Aug. 4, 1999, Appl. No. 368,131.

Int. Cl. H02K *7/10;13/02*

U.S. Cl. 310—103 **9 Claims**

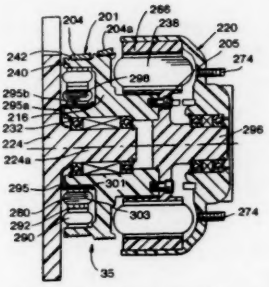
1. A magnetically driven fan clutch comprising:

a plastic mount connected to a stationary part of a vehicle and having a central hub for the clutch;

a first rotatable plastic member mounted for rotation and carrying an energizable magnetic field;

bearings on the central hub mounting the first rotatable plastic members for rotation about the central hub;

a series of coils mounted on the first rotatable plastic member for connection to an electrical source to be energized to provide the energizable magnetic field;



a slip ring carried by the stationary mount for providing electrical connection to the rotatable series of coils;

a second rotatable driven plastic member mounted for rotation relative to the first rotatable member;

magnetic elements on the driven plastic member to be magnetically coupled to the energizable magnetic field to rotate the driven plastic member; and

plastic fan blades mounted on the driven plastic member for being driven by a magnetic clutch formed by the energizable magnetic field and the magnetic elements.

US 6,331,744 B1

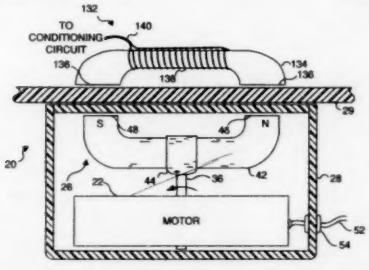
CONTACTLESS ENERGY TRANSFER APPARATUS

James C. Chen, Bellevue; Darrin Huston, Enumclaw, and Brian D. Wilkerson, Issaquah, all of Wash., assignors to Light Sciences Corporation, Issauah, Wash.

Continuation-in-part of application No. 09/325,022, filed on Jun. 3, 1999, which is a division of application No. 09/021,693, filed on Feb. 10, 1998, now Pat. No. 5,945,762. This application Apr. 11, 2000, Appl. No. 547,700.

Int. Cl. H02K *33/00*

U.S. Cl. 310—171 **16 Claims**



1. A contactless electrical energy transfer apparatus comprising:

(a) a portable device including:

(i) a receiver coil; and

(ii) a housing in which the receiver coil is disposed; and

(b) a flux generator including:

(i) a housing adapted to be positioned proximate to the housing for the receiver coil;

(ii) a magnetic field generator disposed within the housing for the flux generator and comprising at least one permanent magnet and a flux shunt, said at least one permanent magnet being fixed relative to the receiver coil; and

(iii) a prime mover that is drivingly coupled to said flux shunt, said flux shunt being thereby caused by the prime mover to intermittently pass adjacent to pole faces of said at least one permanent magnet so as to provide a magnetic flux shunt path between the pole faces, thereby varying a magnetic field coupled with the core of the receiver coil to induce an electrical current to flow in the receiver coil.

US 6,331,745 B2

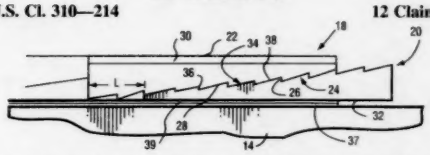
ADJUSTABLE GENERATOR STATOR SLOT WEDGE SYSTEM

Thomas R. Blakelock, Clifton Park; Thomas R. Butman, Jr., Delmar, and Alan M. Iversen, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 22, 1999, Appl. No. 444,677

Int. Cl. H02K *3/48*

U.S. Cl. 310—214 **12 Claims**



1. A generator stator including a magnetic core having a plurality axially extending radial slots arranged about the periphery thereof with windings in each of said radial slots; at least one adjustable assembly in an axially outermost end of said each slot, arranged to restrain said windings in said radial slot, said adjustable assembly comprising mating components including a wedge component and a slide component which interface along stepped matching surfaces formed on respective sloped sides of each of said wedge component and said slide component, said sloped side surfaces lying at an acute angle to a center axis of the magnetic core, said wedge component slidably received in a pair of dovetail grooves in said radial slot, said slot component located radially inwardly of said wedge component.

US 6,331,746 B1

ACTUATOR

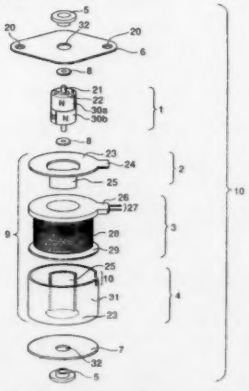
Sakae Fujitani; Yuzuru Suzuki, and Masaki Kagawa, all of Shizuoka-ken, Japan, assignors to Minebea Co., Ltd., Nagano-Ken, Japan

Filed Jan. 25, 2000, Appl. No. 490,506

Claims priority, application Japan, Jan. 29, 1999, 11-022268

Int. Cl. H02K *1/22*

U.S. Cl. 310—263 **12 Claims**



1. A single phase actuator comprising:

an armature having an energizable coil winding around an axial gap;

a stopper mechanism comprising a first stopper located at a first angular position that is between 0 and 90 degrees in terms of electrical angle from a zero torque position and a second stopper located at a second angular position that is between 90 and 180 degrees in terms of electrical angle from said zero torque position; and

a rotor rotatably disposed within said axial gap for rotation between said first angular position and said second angular position, said rotor comprising a plurality of magnets connected axially, each of said rotor magnets having magnetic poles, the magnetic poles of each rotor magnet being mutually shifted in a circumferential direction such that the magnetic poles of each rotor magnet are not in axial alignment with the magnetic poles of the each other rotor magnet; and

wherein, in response to energization of said coil in a first direction, said rotor rotates to said first angular position of said first stopper;

wherein, in response to energization of said coil in a second direction, said rotor rotates to said second angular position of said second stopper; and

wherein, upon deenergization of said coil when said rotor is located at either said first angular position or said second angular position, said rotor maintains its angular position in response to a detent torque.

US 6,331,747 B2

SURFACE ACOUSTIC WAVE MOTOR AND APPARATUS HAVING THE SAME

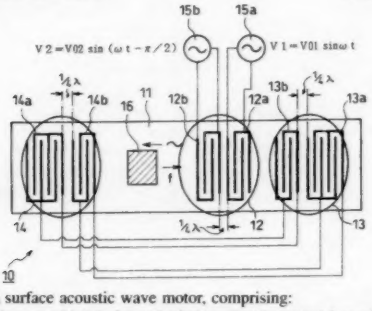
Ryuichi Yoshida, Sakai, and Yasuhiro Okamoto, Tondabayashi, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Feb. 15, 2001, Appl. No. 784,515

Claims priority, application Japan, Feb. 23, 2000, 12-045475

Int. Cl. H01L *41/08*

U.S. Cl. 310—313 R **14 Claims**



1. A surface acoustic wave motor, comprising:

a substrate which is formed of piezoelectric material capable of propagating a surface acoustic wave with a wavelength λ;

a first comb-shaped electrode having interdigital structure for recovery and re-excitation, which is a unidirectional comb-shaped electrode having interdigital structure arranged at one end of the substrate, and not connected to an external power supply, said first comb-shaped electrode having interdigital structure including a first electrode and a second electrode arranged outside the first electrode on the substrate, said first electrode and the second electrode being arranged at a spacing of λ/4;

a second comb-shaped electrode having interdigital structure for recovery and re-excitation, which is a unidirectional comb-shaped electrode having interdigital structure arranged at the other end of the substrate and not connected to an external power supply, said second comb-shaped electrode having interdigital structure including a third electrode and a fourth electrode arranged outside the third electrode on the substrate, said third electrode and the fourth electrode being arranged at a spacing of λ/4;

a comb-shaped electrode having interdigital structure for generating surface acoustic waves, which is arranged between the first and second comb-shaped electrodes having interdigital structure for recovery and re-excitation, connected to an external high frequency power supply, and capable of generating surface acoustic waves with a wavelength λ toward both ends of the substrate in the substrate; and

connecting parts for electrically connecting the first electrode and the fourth electrode to each other, and the second electrode and the third electrode to each other.

US 6,331,748 B1

DRIVING CIRCUIT OF A PIEZO-CERAMIC TRANSFORMER CAPABLE OF CONTROLLING AN INPUT VOLTAGE AND A DIMMING CONTROL METHOD THEREOF

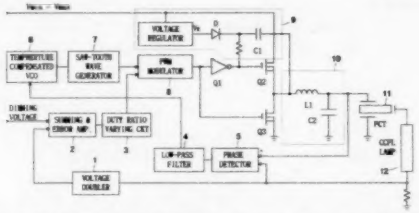
Soongil Hong, Kyonggi-Do, Rep. of Korea, assignor to Dongil Technology Ltd., Kyonggi-do, Rep. of Korea

Continuation-in-part of application No. 09/268,983, filed on Mar. 16, 1999, now abandoned. This application Apr. 21, 2000, Appl. No. 557,901.

Claims priority, application Rep. of Korea, Dec. 21, 1998, 98-56719

Int. Cl. H01L *41/107*

U.S. Cl. 310—318 **9 Claims**



1. A fixed frequency driving circuit for a piezo-ceramic transformer capable of controlling an input voltage, comprising:

a piezo-ceramic transformer driving circuit electrically connected to drive the piezo-ceramic transformer, said piezo-ceramic transformer driving circuit having an input and an output;

a voltage doubler rectifier electrically connected to the piezo-ceramic transformer for rectifying an output voltage of the piezo-ceramic transformer, said voltage double having an output;

a summing and error amplifier electrically connected to the output of the voltage doubler rectifier for outputting a sum voltage of a dimming voltage and an output voltage of the voltage doubler rectifier;

a phase detector electrically connected between the input and output of the piezo-ceramic transformer for detecting a phase between the input and output signals of the piezo-ceramic transformer;

a temperature compensated voltage controlled oscillator for compensating temperature characteristics for the piezo-ceramic transformer, the temperature compensated voltage controlled oscillator being electrically connected to the output of the phase detector;

a charge pump circuit electrically connected to the input of the piezo-ceramic transformer driving circuit for maintaining zero voltage switching and reducing switching loss of a switching element in combination with a phase-locked loop operation produced by the voltage controlled oscillator and phase detector; and

a modulator electrically connected to the input of the piezo-ceramic transformer driving circuit for continuously producing an amplitude of a first harmonic frequency component when the input voltage is changed from a minimum voltage to a maximum voltage by controlling a duty ratio provided to the piezo-ceramic transformer driving circuit according to output signals from the phase detector and the summing and error amplifier.

US 6,331,749 B1

EXCITATION METHOD OF LASER CATHODE-RAY TUBE

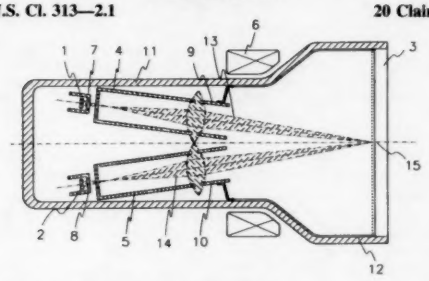
Oleg Mikhailovich Makienko, Fryazino; Nikolai Grigoryevich Rumyantsev, deceased, late of Shelkovo, and Yury Vladimirivich Petrushenko, Fryazino, all of Russian Federation, legal representative, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 2, 1999, Appl. No. 243,172

Claims priority, application Russian Federation, Feb. 4, 1998, 98102522

Int. Cl. H01J *31/00*

U.S. Cl. 313—2.1 20 Claims



1. A laser cathode ray tube comprising:

a laser screen;

a focusing system for focusing at least two electron beams simultaneously on one point on the laser screen;

a deflection system for deflecting the at least two electron beams; and

at least two electron guns each with a cathode for generating the at least two electron beams.

US 6,331,750 B1

LAMP HAVING MULTI-COLORED RADIANT OUTPUT

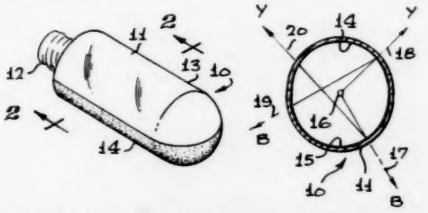
Gary Thompson, 20922 Franwood Dr., Saugus, Calif. 91350

Provisional application No. 60/100,798, filed on Sep. 18, 1998.

This application Sep. 16, 1999, Appl. No. 397,310.

Int. Cl. H01J *5/16*

U.S. Cl. 313—113 6 Claims



1. A light source apparatus that emits a visible light having a plurality of colors comprising:

a light source emitting a visible light;

a transparent envelope having an exterior surface and an interior surface enclosing said light source;

at least one dichroic filter partially carried on said envelope surface wherein said dichroic filter is characterized as a reflector for reflecting a desired band of wavelengths of visible light and to transmit all other wavelengths;

said desired band of wavelengths reflected from said dichroic filter exit via said transparent envelope while transmitting all said other wavelengths through said transparent envelope via said dichroic filter whereby the total amount of visible light is emitted as separate colors.

US 6,331,751 B1

INNER SHIELD COUPLING STRUCTURE FOR CRT

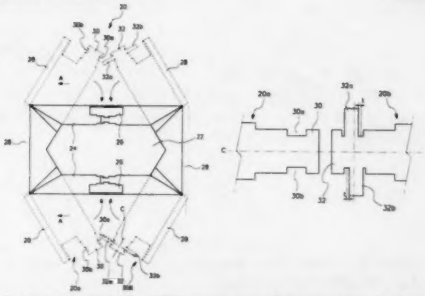
Jong-Seop Kwak, Pusan, and Kyeung-Yae Kang, Kyongsangbuk-do, both of Rep. of Korea, assignors to Sam-Sung SDI Co., Ltd., Suwong, Rep. of Korea

Filed Sep. 17, 1999, Appl. No. 397,912

Claims priority, application Rep. of Korea, Mar. 29, 1999, 99-5009

Int. Cl. H01J *29/80*

U.S. Cl. 313—402 3 Claims



1. An inner shield for CRT comprises a first protrusion having an upper indented portion and a lower indented portion, and a second protrusion having an upper band and a lower band, wherein the bands are asymmetrical.

US 6,331,752 B1

COLOR CATHODE RAY TUBE HAVING A LOW DYNAMIC FOCUS VOLTAGE

Tutomu Tojyou, Chousei-gun; Shoji Shirai, and Shinichi Kato, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application No. 09/012,450, filed on Jan. 23, 1998, now Pat. No. 6,025,674, which is a continuation of application No. 08/808,037, filed on Mar. 4, 1997, now Pat. No. 5,739,631, which is a continuation of application No. 08/504,139, filed on Jul. 19, 1995, now Pat. No. 5,608,284.

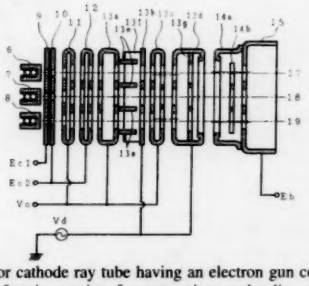
This application Nov. 4, 1999, Appl. No. 433,726.

Claims priority, application Japan, Jul. 19, 1994, 6-167120

This patent is subject to a terminal disclaimer.

Int. Cl. H01J *29/46;29/50;29/56;29/58*

U.S. Cl. 313—441 15 Claims



1. A color cathode ray tube having an electron gun comprising:

a beam forming region for generating a plurality of electron beams from cathodes and directing said plurality of electron beams toward a phosphor screen along initial paths in a horizontal plane;

a main lens for focusing said plurality of electron beams on said phosphor screen;

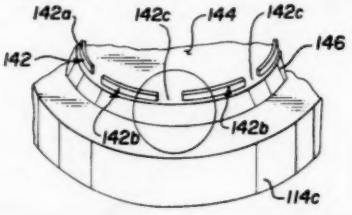
said main lens including a final lens configured so that said plurality of electron beams are focused in both a horizontal direction and a vertical direction, outer electron beams among said plurality of electron beams are deflected toward a trajectory of a center electron beam among said plurality of electron

beams, and a lens strength thereof weakens with an increase in an amount of deflection of said plurality of electron beams;

at least one correction lens for curvature of an image field located between said final lens and said beam forming region, and for focusing said plurality of electron beams in both the horizontal and vertical directions and weakening focusing action on said plurality of electron beams according to the increase in an amount of deflection of said plurality of electron beams;

said at least one correction lens for curvature of the image field having an electrode configuration in which trajectories of outer electron beams among said plurality of election beams are deflected one of toward and away from a trajectory of a center electron beam among said plurality of electron beams according to the increase in an amount of deflection of said plurality of electron beams.

US 6,331,753 B1
IMAGE INTENSIFIER TUBE
Michael Jude Iosue, Phoenix, Ariz., assignor to Litton Systems, Inc., Woodland Hills, Calif.
Filed Mar. 18, 1999, Appl. No. 272,039
Int. Cl. H01J *31/50*
U.S. Cl. 313—542 **5 Claims**



1. A photocathode comprising: an active layer responsive to photons of light to liberate photoelectrons, and an insulative spacing structure carried by the photocathode for extending toward and physically touching a microchannel plate to establish a spacing distance between the microchannel plate and the photocathode.

US 6,331,754 B1
INDUCTIVELY-COUPLED-PLASMA-PROCESSING APPARATUS
Tsutomu Satoyoshi, Nirasaki; Kenji Amano, Nakakoma-gun; Hiromichi Ito, Kofu, and Yoshito Miyazaki, Tokyo, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan
Filed May 5, 2000, Appl. No. 565,540
Claims priority, application Japan, May 13, 1999, 11-132618; May 13, 1999, 11-132619; May 13, 1999, 11-132620
Int. Cl. H01J *7/24*
U.S. Cl. 315—111.51 **33 Claims**

1. An inductively-coupled-plasma-processing apparatus for processing a target substrate, comprising:

an airtight process chamber;

a worktable on which the target substrate is placed in the process chamber;

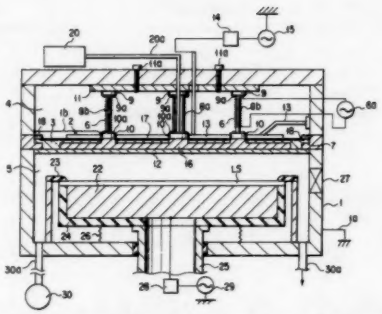
a process gas supply system for supplying a process gas into the process chamber;

an exhaust system for exhausting the process chamber and setting the process chamber at a vacuum;

a dielectric panel arranged in a ceiling of the process chamber;

an RF antenna arranged outside the process chamber to face the dielectric panel, the RF antenna generating an inductive electric field for turning the process gas into plasma in the process chamber;

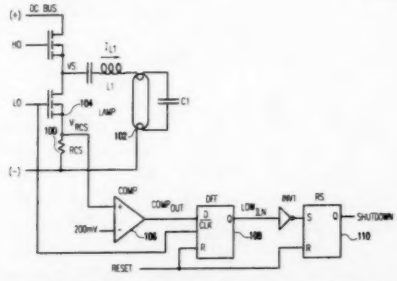
an overhead frame arranged above the dielectric panel;



a suspender supported by the overhead frame and arranged to impose a load of the dielectric panel on the overhead frame such that the dielectric panel is prevented from warping downward, the suspender being disposed at a position distant from a peripheral edge of the dielectric panel and within a contour of the target substrate mounted on the worktable; and

a showerhead arranged between the worktable and the dielectric panel and including a shower case having a gas flow path connected to the process gas supply system and a plurality of gas supply holes opened to the worktable, the shower case being connected to the suspender and having a portion extending in parallel to the dielectric panel to serve as a supporting bracket for supporting the dielectric panel.

US 6,331,755 B1
CIRCUIT FOR DETECTING NEAR OR BELOW RESONANCE OPERATION OF A FLUORESCENT LAMP DRIVEN BY HALF-BRIDGE CIRCUIT
Thomas J. Ribarich, Laguna Beach, and Talbott M. Houk, Culver City, both of Calif., assignors to International Rectifier Corporation, El Segundo, Calif.
Provisional application No. 60/071,482, filed on Jan. 13, 1998. This application Jun. 10, 1998, Appl. No. 95,062.
Int. Cl. H05B *37/02*
U.S. Cl. 315—225 **9 Claims**



1. A circuit for detecting near or below resonance operation of a lamp resonant circuit, said lamp resonant circuit including an inductor having a current passing therethrough, the current in said lamp resonant circuit being driven by an alternating voltage produced at a node between upper and lower transistor switches disposed in a half-bridge configuration, said circuit comprising:

a sense resistor disposed between the lower transistor switch and ground;

means for comparing the voltage across said sense resistor against a predetermined reference voltage to generate an output comparison signal; and

means for gating the output comparison signal to the turn-off edge of the lower MOSFET to generate a signal indicative of a situation in which the inductor current and the voltage at the node between the upper and lower switches of the half-bridge

circuit have a phase angle therebetween approaching zero, thereby signifying near or below resonance operation of the lamp resonant circuit, and shutting down the half-bridge circuit in response to the signal.

US 6,331,756 B1

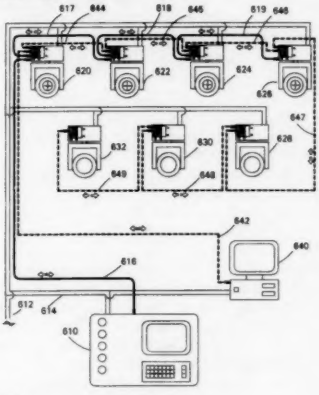
METHOD AND APPARATUS FOR DIGITAL COMMUNICATIONS WITH MULTIPARAMETER LIGHT FIXTURES

Richard S. Belliveau, 10643 Floral Park, Austin, Tex. 78759

Filed Sep. 10, 1999, Appl. No. 394,300

Int. Cl. F21V *33/00*

U.S. Cl. 315—316 **32 Claims**



1. A lighting system comprising:

a first digital communications system;

a first controller connected to the first digital communications system;

a second digital communications system;

a first plurality of multi-parameter light fixtures interconnected by the first digital communications system; and

a second plurality of multi-parameter light fixtures interconnected by the second digital communications system;

wherein the first and second plurality of light fixtures includes at least one gateway-capable light fixture that is interconnected in both the first and second digital communications systems.

US 6,331,757 B1

STAGGERED PULSE WIDTH MODULATION APPARATUS AND METHOD FOR EMI MINIMIZATION IN MOTOR

John Edward Makaran, London, Canada, assignor to Siemens Canada Limited, Mississauga, Canada

Filed Jun. 19, 1998, Appl. No. 100,000

Int. Cl. H02P *6/02*

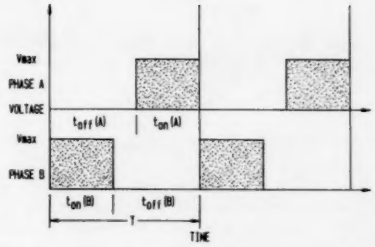
U.S. Cl. 318—254 **42 Claims**

1. A motor driver circuit comprising:

a first driver having a first pulsed signal to activate a first winding of a motor wherein said first winding has an associated first time constant; and

a second driver having a second pulsed signal to activate a second winding of said motor wherein said second winding has an associated second time constant;

wherein individual pulses of said first pulsed signal and individual pulses of said second pulsed signal are staggered



within one of said first time constant and said second time constant.

US 6,331,758 B1

ELECTRIC HAND WITH CUSHIONING MECHANISM

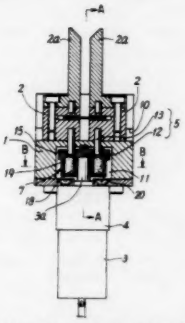
Seiji Takanashi; Hiroshi Miyachi, and Koichiro Kanda, all of Ibaraki, Japan, assignors to SMC Corporation, Tokyo, Japan

Filed Sep. 5, 2000, Appl. No. 655,453

Claims priority, application Japan, Oct. 12, 1999, 11-289816

Int. Cl. H05B *11/01*

U.S. Cl. 318—560 **4 Claims**



1. An electric hand with a cushioning function comprising a pair of jaw members that are for grasping a workpiece and can be opened and closed, an electric motor having a rotating drive shaft, and a converting mechanism disposed between said drive shaft and said jaw members for converting a reciprocating rotating motion of said drive shaft to opening/closing motions of said jaw members,

wherein said converting mechanism has a cam member mounted to said drive shaft of said electric motor, a pair of cam grooves formed in said cam member, and drive pins respectively mounted to said respective jaw members, respectively fitted into said respective cam grooves, and displaced in said cam grooves in an opening/closing direction of said jaw members by reciprocating rotation of said cam member,

and cushioning means for absorbing impact that acts on said drive shaft when said cam member stops at swinging ends is provided between said drive shaft and said cam member.

US 6,331,759 B1

PULSE DRIVE ANGLE MEASUREMENT SYSTEM AND METHOD

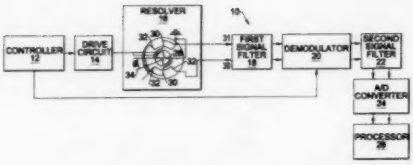
Robert James Atmur, Whittier, Calif., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 27, 1999, Appl. No. 300,807

Int. Cl. G05B *1/06*

U.S. Cl. 318—661 **51 Claims**

1. A resolver system for determining an angle position of a shaft comprising:



an air-core resolver connected to the shaft having first and second output windings and an input winding in electrical inductive communication with the first and second output windings, wherein rotation of the shaft changes the position of the first and second windings with respect to input winding, and wherein the position of the first and second output windings relative to the input winding defines the angle position of the shaft;

a drive circuit electrically connected to the input winding of said resolver, wherein said drive circuit generates a pulse drive signal for input into the input winding, and wherein the first and second output windings output respective first and second data signals representing the angle position of the shaft, wherein said pulse drive circuit provides a pulse drive signal having individual pulses with amplitudes and widths that are selected based on power input requirements of the system and the withstanding voltage of the resolver; and

a processor electrically connected to the output of the first and second output windings, wherein said processor receives the first and second data signals from the output windings and determines the angle position of the shaft, wherein said drive circuit generates a pulse drive signal having a sufficient amplitude such that said processor determines the angle position of the shaft from the first and second data signals independent of an amplifier.

US 6,331,760 B1

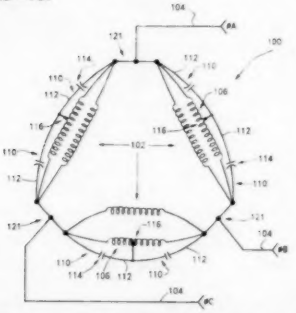
CAPACITIVE INDUCTION MOTOR AND METHOD

Oscar B. McLane, Jr., 3732 Nereis Dr., La Mesa, Calif. 91941

Filed Oct. 6, 1998, Appl. No. 167,391

Int. Cl. H02P *1/26*

U.S. Cl. 318—767 **31 Claims**



1. A method of connecting polyphase power to a polyphase induction motor winding comprising a primary winding having a plurality of first phase windings, each of said first phase windings being electrically connected to at least one other of said first phase windings, the method comprising:

disposing a tap between a center and a first end of each of said first phase windings;

connecting at least one capacitive element in parallel to a portion of each phase winding between the tap and a second end of the phase winding opposite the first end of the phase winding; and

connecting one phase of a polyphase alternating current (ac) power source to an end of each phase winding;

wherein said capacitive elements alternately charge and discharge during the application of a polyphase alternating current to said induction motor winding.

US 6,331,761 B1

BATTERY CHARGER CAPABLE OF EVALUATING BATTERY CHARGE STATE BASED ON THE CHARGING HISTORY OF THE BATTERY

Yashdeep Kumar, Kalamazoo, and Donald Malackowski, Schoolcraft, both of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.

Division of application No. 09/455,091, filed on Dec. 6, 1999, now Pat. No. 6,160,376, which is a division of application No. 09/102,142, filed on Jun. 22, 1998, now Pat. No. 6,018,227.

This application Nov. 13, 2000, Appl. No. 711,845.

Int. Cl. H01M *10/44;10/46*

U.S. Cl. 320—132 **28 Claims**

1. A rechargeable battery pack comprising:

a housing;

at least one rechargeable cell disposed in said housing;

a first set of terminals attached to said housing that is attached to said at least one rechargeable cell, wherein energy is applied to said first set of terminals for storage in said at least one rechargeable cell and current is drawn from said at least one rechargeable cell through said first set of terminals;

a memory disposed in said housing, said memory having a first data field in which data representative of the number of times the battery has been charged are stored and a plurality of second data fields in which data representative of the energy stored in the battery after charging are stored; and

a second set of terminals attached to said housing and connected to said memory, wherein the data representative of the number of times the battery has been charged and the data representative of the energy stored in the battery are written to said memory and read from said memory through said second set of terminals.

US 6,331,762 B1

ENERGY MANAGEMENT SYSTEM FOR AUTOMOTIVE VEHICLE

Kevin I. Bertness, Batavia, Ill., assignor to Midtronics, Inc., Willowbrook, Ill.

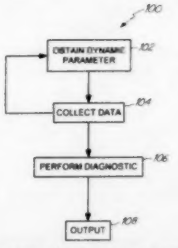
Continuation-in-part of application No. 09/575,627, filed on May 22, 2000, and application No. 08/962,754, filed on Nov. 3, 1997, now Pat. No. 6,081,098, said application No. 09/575,627 is a continuation-in-part of application No. 08/962,754, Provisional application No. 60/175,762, filed on Jan. 12, 2000, Provisional application No. 60/165,208, filed on Nov. 12, 1999, Provisional application No. 60/132,622, filed on May 5, 1999.

This application May 4, 2000, Appl. No. 564,740.

This patent is subject to a terminal disclaimer.

Int. Cl. C02J *7/14;* **G01N** *27/416*

U.S. Cl. 320—134 **299 Claims**



1. A method of charging a battery in a vehicle having an internal combustion engine configured to drive an alternator electrically coupled to the battery and adapted to charge the battery with a charge signal applied to the battery, the method comprising:

coupling to the battery through a four point Kelvin connection;

measuring a dynamic parameter of the battery using the Kelvin connection, the dynamic parameter measurement a function of a time varying signal;

determining a condition of the battery as a function of the measured dynamic parameter; and

controlling the charge signal in response to the determined condition of the battery.

US 6,331,763 B1

DEVICES AND METHODS FOR PROTECTION OF RECHARGEABLE ELEMENTS

Brian Thomas, San Francisco; Jean-Marc Beaufils, Mountain View; Adrian Cogan, Redwood City, all of Calif.; Bernard Dallemange, Osny; Gilles Gozlan, Le Mesnil Theribus, both of France; Jiyuan Luan, Fremont, Calif.; Neill Thornton, Turlock, Calif., and James Toth, San Carlos, Calif., assignors to Tyco Electronics Corporation, Middletown, Pa.

Continuation-in-part of application No. 09/060,863, filed on Apr. 15, 1998, Provisional application No. 60/126,952, filed on Mar. 25, 1999. This application Oct. 22, 1999, Appl. No. 425,519.

Int. Cl. H01M *10/44;10/46*

U.S. Cl. 320—136 **39 Claims**

1. A protection circuit for use with a charger and a chargeable element, comprising:

a shunt regulator having first and second terminals for coupling in parallel across the chargeable element, the shunt regulator having a threshold ON voltage; and

a first variable resistor thermally and electrically coupled to the shunt regulator, the first variable resistor having a first terminal for coupling to the charger in series and a second terminal for coupling to the chargeable element in series,

wherein the first variable resistor limits current flowing through the shunt regulator during an overvoltage or overcurrent condition before the current reaches a level sufficient to cause the shunt regulator to fail.

US 6,331,764 B1

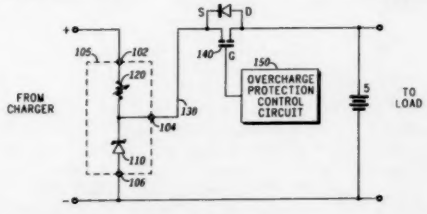
SUPPLEMENTAL BATTERY OVERCHARGE PROTECTION DEVICE

John Wendell Oglesbee, Watkinsville, Ga.; Arthur G. Burns, Plantation, and Georgina More, Lakeland, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of application No. PCT/US99/01911, filed on Jan. 29, 1999, Provisional application No. 60/073,287, filed on Jan. 31, 1998, Provisional application No. 60/073,279, filed on Jan. 31, 1998. This application May 25, 2000, Appl. No. 579,290.

Int. Cl. H02J *7/00*

U.S. Cl. 320—136 **19 Claims**



1. A protection device comprising:

a switch having an input terminal and an output terminal, the output terminal for connection to a terminal of a rechargeable battery to be charged, the switch preventing current to flow from its input terminal to the output terminal and into the rechargeable battery when it is opened; and

a switch protection circuit comprising a zener diode and a thermal resistor connected in series, the switch protection circuit for connection in parallel with output terminals of a battery charger, the zener diode being thermally coupled to the thermal resistor and a cathode of the zener diode being connected to the input terminal of the switch;

wherein the zener diode protects the switch from overvoltage conditions by shunting current away from the switch, and the thermal resistor protects the zener diode from overtemperature conditions by entering a high impedance state to effectively disconnect current from the battery charger when the temperature of the zener diode exceeds a predetermined threshold.

US 6,331,765 B1

SERIES COMPENSATOR

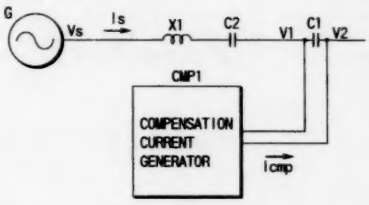
Hajime Yamamoto, Yokohama; Shigeru Tanaka, Inagi; Masaaki Shigeta, Tokyo; Mami Mizutani, Hachioji; Yukitaka Monden, Yokohama, and Hiroshi Uchino, Hachioji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 24, 2000, Appl. No. 512,455

Claims priority, application Japan, Feb. 25, 1999, 11-047983

Int. Cl. G05F *1/70*

U.S. Cl. 323—210 **25 Claims**



1. A series compensator, for compensating for an electric amount of an AC transmission line, comprising:

a first capacitor and a second capacitor connected in series to each other and connected to said AC transmission line; and

a compensation circuit generator connected in parallel to said first capacitor, said compensation current generator being configured to generate a compensation current applied to said parallel connected first capacitor.

US 6,331,766 B1

FREQUENCY SENSING NMOS VOLTAGE REGULATOR

Kent M. Kalpakjian, Boise, and John D. Porter, Meridian, both of Id., assignors to Micron Technology, Boise, Id.

Continuation of application No. 09/386,312, filed on Aug. 31, 1999, now Pat. No. 6,175,221. This application Oct. 20, 2000, Appl. No. 692,472.

This patent is subject to a terminal disclaimer.

Int. Cl. G05F *1/44;1/40;1/56*

U.S. Cl. 323—268 **19 Claims**

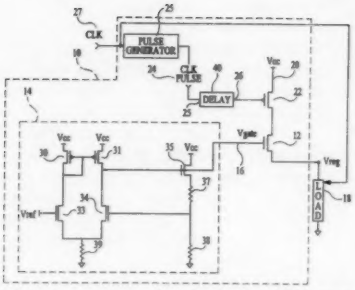
1. A method for regulating a supply voltage to a memory device comprising the steps of:

generating a clock pulse signal based on a system clock signal;

providing said clock pulse signal to a delay circuit;

determining a control signal based on said clock pulse signal and a delay time of said delay circuit;

providing said determined control signal to a gate of a transistor, said transistor having a first terminal coupled to said supply



voltage and a second terminal coupled to said memory device, said transistor turning on and off in response to said control signal; and

regulating said supply voltage passed through said transistor to said memory device by turning on and off said transistor.

US 6,331,767 B1

POWER SUPPLIES OF ECUS

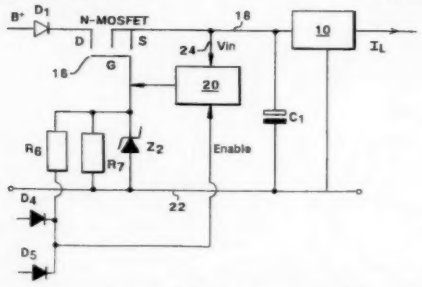
Gary Raymond Davies, Rugby, United Kingdom, assignor to Lucas Industries, plc, London, United Kingdom

Filed Aug. 22, 2000, Appl. No. 643,270

Claims priority, application United Kingdom, Feb. 24, 1998, 9803723; WIPO, Jan. 29, 1999, PCT/GB99/00322

Int. Cl. G05F *1/40*

U.S. Cl. 323—282 **9 Claims**



1. An input circuit for a voltage regulator comprising:

a control device having an input terminal and an output terminal, said control device responsive to an enabling signal applied to said input terminal to generate a control voltage at said output terminal;

a n-channel MOSFET having a gate terminal connected to said output terminal of said control device, said MOSFET also having a drain terminal adapted to be connected to a power supply and a source terminal adapted to be connected to a voltage regulator input terminal, said MOSFET being initially in a non-conductive state to prevent current from flowing from said power supply to said voltage regulator and said MOSFET being responsive to said control voltage to change to a conducting state to allow an electric current to flow between said drain and source terminals; and

a zener diode having an anode and a cathode, said anode being connected to said gate terminal of said MOSFET to limit said control voltage such that said MOSFET progressively reduces the current flowing between said drain and source terminals when the power supply voltage increases above a predetermined level.

US 6,331,768 B1

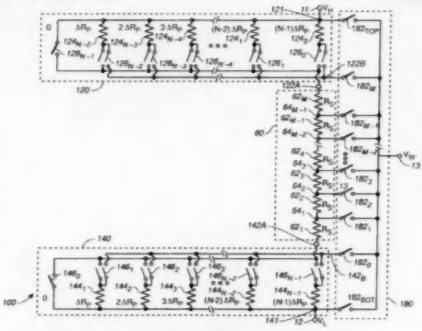
HIGH-RESOLUTION, HIGH-PRECISION SOLID-STATE POTENTIOMETER

Joseph Drori, San Jose, and Allan Ming-Lun Lin, Fremont, both of Calif., assignors to Xicor, Inc., Milpitas, Calif.

Filed Jun. 13, 2000, Appl. No. 593,734

Int. Cl. H03H *1/00*

U.S. Cl. 323—369 **40 Claims**



1. A potentiometer network comprising:

a first main terminal and a second main terminal;

a first variable resistance network comprising a first terminal, a second terminal, and a first variable resistance value (R_1) which varies between zero ohms and a first resistance level (R_P), the first terminal of the first variable resistance network being coupled to the first main terminal;

a second variable resistance network comprising a first terminal, a second terminal, and a second variable resistance value (R_2) which is substantially equal to the difference between the first resistance level and the first variable resistance value, the first terminal of the second variable resistance network being coupled to the second main terminal;

a resistor stack comprising a first plurality of resistors coupled in series to one another at a second plurality of internal nodes, each internal node coupling two adjacent resistors of the stack, the first resistor in the stack having a terminal coupled to the second terminal of the first variable resistance network, the last resistor in the stack having a terminal coupled to the second terminal of the second variable resistance network, each resistor having a value substantially equal to a second resistance level (R_S); and

a wiper terminal coupled to one of the plurality of internal nodes of the resistor stack, or to one of the second terminals of the variable resistor networks, or to one of the first and second main terminals; and

wherein said first resistance level (R_P) has a value which is in a range spanning from seventy-five percent of said second resistance level (R_S) to one-hundred-and-twenty-five percent of said second resistance level (R_S).

US 6,331,769 B1

RMS POWER SENSOR WITH 84 DB DYNAMIC RANGE

Vincent W. C. Wong, Morgan Hill; William W. Oldfield, Redwood City, and Kenneth C. Harvey, Los Gatos, all of Calif., assignors to Anritsu Company, Morgan Hill, Calif.

Filed Jun. 18, 1999, Appl. No. 336,607

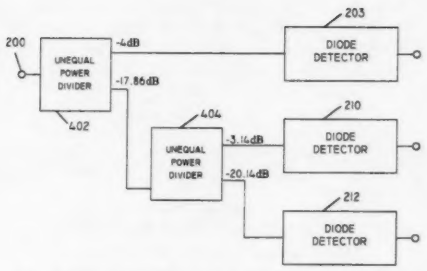
Int. Cl. G01R *15/08;15/10*

U.S. Cl. 324—132 **13 Claims**

1. A power sensor comprising:

diode detectors, each having an input, and having an output providing an output of the power sensor; and

a power distribution manifold having an input forming an input to the power sensor and at least three outputs, each one of the



three outputs coupled to the input of a respective one of the diode detectors, the power distribution manifold for distributing a signal provided from the input of the power sensor to the diode detectors so that a different attenuation is provided between the power sensor input and each one of the diode detectors, the different attenuation values set so that a greater overlap of diode square law operation range occurs between a first two of the diode detectors which receive a signal from the power sensor input with a higher combined attenuation than a second two of the diode detectors.

US 6,331,770 B1

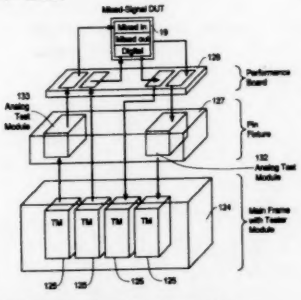
APPLICATION SPECIFIC EVENT BASED SEMICONDUCTOR TEST SYSTEM

Shigeru Sugamori, Santa Clara, Calif., assignor to Advantest Corp., Tokyo, Japan

Filed Apr. 12, 2000, Appl. No. 547,753

Int. Cl. G01R *7/00*

U.S. Cl. 324—158.1 **12 Claims**



1. A semiconductor test system, comprising:

two or more tester modules whose performances are identical to or different from one another;

a test system main frame for accommodating an arbitrary combination of the tester modules therein;

a test fixture provided on the test system main frame for electrically connecting the tester modules and a device under test;

a measurement module provided in the test fixture for converting signals between the device under test and the tester module depending on a function of the device under test; and

a host computer for controlling an- overall operation of the test system by communicating with the tester modules in the test system through a tester bus.

US 6,331,771 B1

BRACKET ASSEMBLY, ESPECIALLY FOR USE AS A MAGNETIC DEVICE IN A MONITORING DEVICE

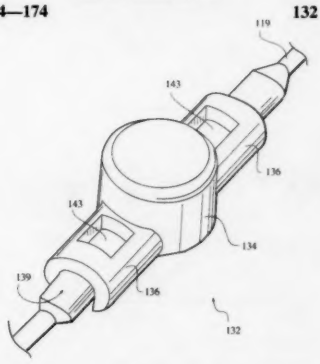
Tsutomu Muraoka; Kazuo Wada, both of Osaka, and Kozo Kitagawa, Hyogo, all of Japan, assignors to Shimano, Inc., Osaka, Japan

Filed Feb. 23, 1999, Appl. No. 255,344

This patent is subject to a terminal disclaimer.

Int. Cl. C01P *3/487*

U.S. Cl. 324—174 **132 Claims**



1. A bracket assembly for mounting on a single spoke having at least one flat portion, comprising:

a housing having a flat spoke-receiving recess with non-circular cross section and at least one detent extending from said housing into said flat spoke-receiving recess to non-rotatably secure the at least one flat portion of the single spoke within said spoke-receiving recess via a snap-fit.

US 6,331,772 B1

SENSOR COMPONENT

Volker Windte, Offenbach, and Roland Fischer, Nidderau, both of Germany, assignors to DaimlerChrysler AG, Stuttgart, Germany

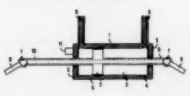
PCT No. PCT/EP97/05612, § 371 Date Jul. 21, 1999, § 102(e) Date Jul. 21, 1999, PCT Pub. No. WO98/23922, PCT Pub. Date Jun. 4, 1998

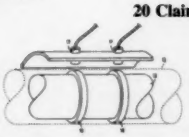
PCT Filed Oct. 10, 1997, Appl. No. 308,693

Claims priority, application Germany, Nov. 22, 1996, 196 48 335

Int. Cl. G01B *7/14*

U.S. Cl. 324—207.24 **20 Claims**





1. A sensor component comprising:

a coded magnetic transmitter;

an associated sensor device, the transmitter and the sensor device being movably positioned relative to one another; and

a shell,

wherein the magnetic transmitter is arranged inside the shell, and

wherein the shell is closed relative to the sensor device and includes austensic steel with more than 0.4 weight percentage nitrogen and with a yield strength of at least 900 Mpa.

US 6,331,773 B1

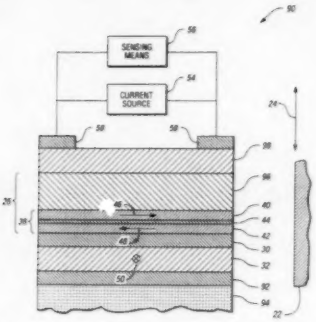
PINNED SYNTHETIC ANTI-FERROMAGNET WITH OXIDATION PROTECTION LAYER

Bradley N. Engel, Louisville, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Apr. 16, 1999, Appl. No. 293,039

Int. Cl. H01L *43/08*; **G01R** *33/09*; **G11B** *5/39*; **G11C** *19/08*

U.S. Cl. 324—252 **16 Claims**



1. A pinned synthetic anti-ferromagnet comprising:

a synthetic anti-ferromagnet;

an oxidation protection layer deposited on the synthetic anti-ferromagnet; and

a nickel oxide layer deposited on the oxidation layer operative to pin the synthetic anti-ferromagnet.

US 6,331,774 B1

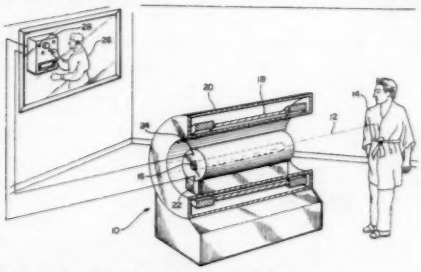
NUCLEAR DECAY LASER AND METHOD

Henry J. Stern, 12825 Buckland St., West Palm Beach, Fla. 33414

Filed Apr. 30, 1999, Appl. No. 303,480

Int. Cl. G01V *3/00*

U.S. Cl. 324—300 **13 Claims**



1. A nuclear decay laser device comprising:

at least one radioactive element;

a magnetic field source associated with said radioactive element for generating and subjecting said radioactive element to a magnetic field external to said radioactive element;

a source of radio frequency energy for subjecting the radioactive element to a radio frequency energy tuned to the Larmor frequency of the precessing radioactive nuclei of sufficient intensity to flip the radioactive nuclei to a flip angle sufficient to allow the radioactive nuclei to release energy in the form of electromagnetic radiation or particles upon relaxation of the radioactive nuclei caused by termination of said radio frequency energy; and

a refocusing RF spin or gradient echo pulse source to subject the flipped radioactive nuclei to the refocusing pulse to bring the nuclei into coherency before the nuclei release energy to produce a coherent decay beam upon relaxation.

US 6,331,775 B1

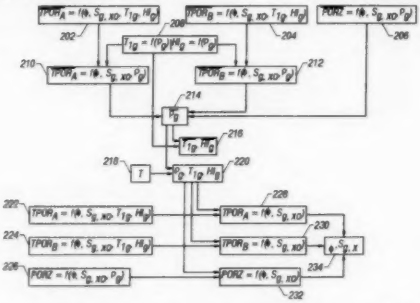
GAS ZONE EVALUATION BY COMBINING DUAL WAIT TIME NMR DATA WITH DENSITY DATA

Holger F. Thern, Houston, and Songhua Chen, Katy, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Sep. 15, 1999, Appl. No. 396,286

Int. Cl. G01V *3/00*

U.S. Cl. 324—303 **22 Claims**



1. A nuclear magnetic resonance method for using a borehole tool in a borehole for determining a plurality of parameters of interest of a volume of earth formation in a reservoir adjacent the borehole, the method comprising:

(a) using a magnet assembly on the borehole tool at at least one depth for producing a static magnetic field in said volume of the formation thereby aligning nuclear spins within said volume parallel to a direction of the static field;

(b) producing a radio frequency (RF) magnetic field in said volume of the formation with an antenna on the borehole tool, said RF magnetic field having a direction orthogonal to a direction of the static field, the RF field including a first pulse sequence

TW_A–90–(t–X–t–echo)$_j$ and a second pulse sequence TW_B–90–(t–X–t–echo)$_j$,

wherein 90 is a tipping pulse for tipping the nuclear spins at an angle substantially equal to ninety degrees to cause precession thereof, TW_A is a waiting time, TW_B is a second waiting time different from the first waiting time, X is a refocusing pulse, and j=1, 2, . . . J, where J is the number of echoes collected in a single sequence of pulses;

(c) measuring with the borehole tool signals inaduced by the pulsed RF field in the formation;

(d) obtaining a bulk density measurement of the earth formation at the at least one depth; and

(e) using a processor for determining a first apparent porosity $TPOR_A$ and a second apparent porosity $TPOR_B$ associated with the first and second pulse sequences respectively from the induced signals at the at least one depth and determining therefrom and from the obtained bulk density the plurality of parameters of interest;

wherein said first and second apparent porosities are different from each other and are determined in part from a polarization of the spins produced by the associated pulse sequence.

US 6,331,776 B1

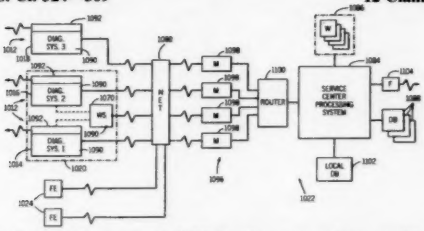
MR IMAGING SYSTEM WITH INTERACTIVE MR GEOMETRY PRESCRIPTION CONTROL OVER A NETWORK

Josef P. Debbins; Richard J. Prorok, both of Waukesha, and William J. Balloni, Menomonee Falls, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of application No. 09/200,144, filed on Nov. 25, 1998. This application Dec. 3, 1999, Appl. No. 453,637.

Int. Cl. G01V *3/00*

U.S. Cl. 324—309 **12 Claims**



1. A magnetic resonance (MR) imaging system for prescribing geometry of an imaging volume of a structure of interest, comprising:

a MR imaging device configured to acquire and reconstruct MR data in real-time of at least one first and second imaging section of the structure of interest in real-time and displaying at least one first and second imaging section of the structures of interest in real-time;

a network coupling the MR imaging device and a remote facility, the network providing remote services to the MR imaging device;

an operator interface configured to transmit at least one selection signal in response to an operator selecting a first boundary plane of the structure of interest on the operator interface, wherein the first boundary plane is prescribed by the first imaging section of the structure of interest, and the operator selecting a second boundary plane of the structure of interest on the operator interface, wherein the second boundary plane is prescribed by the second imaging section of the structure of interest; and

a computer system coupled to the operator interface and the network, wherein the computer system is configured to determine a first and second geometry information corresponding to the first and second imaging sections, respectively, of the structure of interest, in response to the at least one selection signal, and wherein the computer system is configured to store the first and second geometry information in the MR imaging system.

US 6,331,777 B1

MAGNETIC RESONANCE METHOD AND DEVICE

Johan S. Van Den Brink, and Arianne M. C. Van Muiswinkel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 23, 1999, Appl. No. 447,548

Claims priority, application European Pat. Off., Nov. 25, 1998, 98203985

Int. Cl. G01V *3/00*

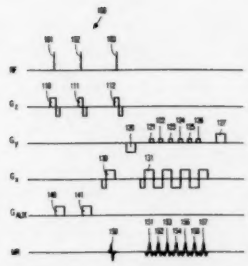
U.S. Cl. 324—312 **10 Claims**

1. A method of forming a magnetic resonance image of an object which is arranged in a steady magnetic field, the method comprising:

executing an imaging pulse sequence comprising

generating an excitation RF pulse,

measuring a navigator MR signal and imaging MR signals, which imaging MR signals are measured along a determined number of lines in the k-space by application of gradients,



comparing a quality criterion of the measured navigator MR signal with a predetermined limit value,

executing again the imaging pulse sequence to measure again the determined number of lines in k-space in order to correct an MR image if the quality criterion of the measured navigator MR signal does not meet the predetermined limit value, and

reconstructing the MR image from the measured imaging MR signals.

US 6,331,778 B1

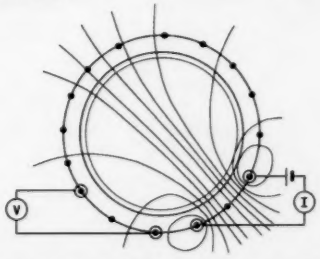
METHODS FOR DETECTING AND LOCATING LEAKS IN CONTAINMENT FACILITIES USING ELECTRICAL POTENTIAL DATA AND ELECTRICAL RESISTANCE TOMOGRAPHIC IMAGING TECHNIQUES

William D. Daily, Livermore, Calif.; Daren L. Laine, San Anotonio, Tex., and Edwin F. Laine, Penn Valley, Calif., assignors to Leak Location Services, Inc., San Antonio, Tex.

Continuation-in-part of application No. 08/534,620, filed on Sep. 27, 1995, now Pat. No. 5,661,406. This application Aug. 25, 1997, Appl. No. 920,227.

Int. Cl. G01N *27/20;* **G01R** *27/08*

U.S. Cl. 324—557 **7 Claims**



1. A method for detecting and locating leaks in a facility having a lined container containing liquids, sludges, or soils, using an excitation of the mass electrical resistivity technique and an electrode array having a multiplicity of electrodes, the lined container positioned within an external media, the method comprising the steps of:

placing the multiplicity of electrodes of the electrode array at fixed points outside of the lined facility within the external media;

placing an injection electrode pair at fixed points outside of the lined facility within the external media, wherein a majority of the electrodes of the electrode array are excluded from the space between the electrodes of the injection electrode pair;

injecting a current into said external media using said fixed injection electrode pair to establish said excitation of the mass; and

taking a set of electrical measurements from the electrodes of the electrode array and analyzing the electrical measurements for characteristic leak signals.

US 6,331,779 B2

METHOD AND APPARATUS FOR TESTING FREQUENCY-DEPENDENT ELECTRICAL CIRCUITS

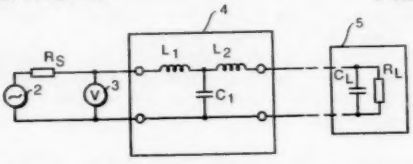
Anthony James Moore, Cirencester, United Kingdom, assignor to BCF Designs Limited, Gloucestershire, United Kingdom

Division of application No. 09/616,543, filed on Jul. 14, 2000, which is a division of application No. 09/026,789, filed on Feb. 20, 1998, now Pat. No. 6,121,788. This application Feb. 16, 2001, Appl. No. 788,009.

Claims priority, application United Kingdom, Jun. 10, 1997, 9712051

Int. Cl. G01R *27/28*

U.S. Cl. 324—619 **8 Claims**



1. A method of estimating component values of an operational T-section low-pass filter comprising the steps of:

(a) providing a T-section low pass filter as a circuit to be tested, the circuit having input and output connections;

(b) applying a test signal from a signal source to the input connections of the T-section filter, the signal source having a known source resistance R_S;

(c) varying the frequency of the test signal over a range of test frequencies;

(d) measuring over the range of test frequencies voltages developed across the input connections of the T-section filter, and using the frequencies and the associated voltages to form measured data pairs;

(e) estimating load resistance R_L of the load applied to the filter;

(f) estimating the 3 dB frequency F_{3dB} of the filter;

(g) making an initial estimate of the effective resistance R_P, by assuming loss resistance R_{e1} of a first inductor and loss resistance R_{e2} of a second inductor both equal zero in the equation;

$$R_P = \frac{R_S(R_L + R_{e1} + R_{e2})}{R_S + R_L + R_{e1} + R_{e2}};$$

(h) making an initial estimate of the total capacitance C_T using the initial estimate of R_P:

$$C_T = \frac{1}{2\pi F_{3dB} R_P};$$

(i) estimating the frequency f_{min} of the inflection point of the frequency response;

(j) making a first estimate of the resistance R_{e1} associated with the first inductor having inductance L_1 at the minimum frequency f_{min} in accordance with the equation:

$$R_{e1} = \frac{DR_S}{1 - D}$$

where:

$$D = \text{antilog}_{10}\left(\frac{\text{dB at } f_{min}}{20}\right);$$

(k) assuming that R_{e2}=R_{e1}, improving the estimate of the effective resistance R_P using the new estimates for R_{e1} and R_{e2} in the equation in step (g); and

(l) improving the estimate for total capacitance C_T using the equation in step (h).

US 6,331,780 B1

STATIC CAPACITANCE-TO-VOLTAGE CONVERTER AND CONVERTING METHOD

Tatsuo Hiroshima; Koichi Nakano; Muneo Harada; Toshiyuki Matsumoto, all of Hyogo-ken, and Yoshihiro Hirota, Kyoto, all of Japan, assignors to Sumitomo Metal Industries Ltd., Osaka, Japan

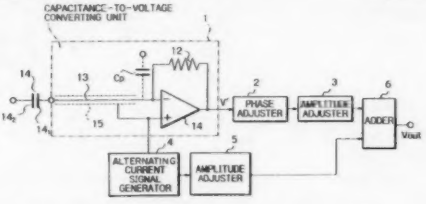
PCT No. PCT/JP99/00229, § 371 Date Sep. 23, 1999, § 102(e) Date Sep. 23, 1999, PCT Pub. No. WO99/38019, PCT Pub. Date Jul. 29, 1999

PCT Filed Jan. 22, 1999, Appl. No. 381,780

Claims priority, application Japan, Jan. 23, 1998, 10-11581; Feb. 6, 1998, 10-26240; Dec. 9, 1998, 10-350021

Int. Cl. G01R *27/26*

U.S. Cl. 324—684 **24 Claims**



1. A static capacitance-to-voltage converter comprising:

an operational amplifier having an inverting input terminal, a non-inverting input terminal and an output terminal, said operational amplifier having said output terminal and said inverting input terminal connected through a feedback resistor;

a signal line having one end connected to said inverting input terminal and the other end capable of being connected to a static capacitance element having a static capacitance;

a shield surrounding at least a portion of said signal line, and connected to said non-inverting input terminal;

an alternating current signal generator for applying said non-inverting input terminal with an alternating current signal; and

an adjuster connected to the output terminal of said operational amplifier and an output terminal of said alternating current signal generator for adjusting an output of said static capacitance-to-voltage converter to minimum when no static capacitance element is connected to said signal line.

US 6,331,781 B2

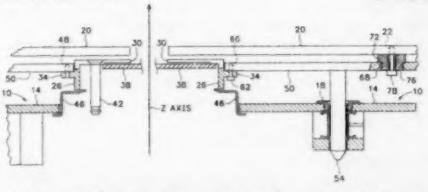
SPACED ADAPTOR PLATE FOR SEMICONDUCTOR TESTER

Jeffrey S. McMullin, and James M. Hannan, both of Portland, Oreg., assignors to Credence Systems Corporation, Fremont, Calif.

Filed Oct. 27, 1999, Appl. No. 428,684

Int. Cl. G01R *31/02*

U.S. Cl. 324—754 **10 Claims**



1. A semiconductor test apparatus including a tester having a test head, a load board attached to the test head and having a receptacle surface oriented substantially perpendicular to a Z-axis and presented toward a handler location, a Z axis abutment structure, an adaptor plate attached to the Z axis abutment structure and having a surface at a predetermined Z axis position relative to the receptacle surface of the load board, the Z-axis position being determined by the Z-axis abutment structure, the surface of the adaptor

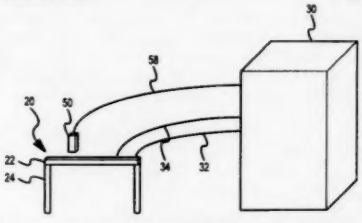
plate being presented toward the handler location, and a set of at least three spacers attached to the adaptor plate and projecting from the surface of the adaptor plate.

US 6,331,782 B1

METHOD AND APPARATUS FOR WIRELESS TESTING OF INTEGRATED CIRCUITS

Stanley A. White, San Clemente; Kenneth S. Walley, Portola Hills; James W. Johnston, Santa Margarita; P. Michael Henderson, Tustin; Kelly H. Hale, Aliso Viejo, all of Calif.; Warner B. Andrews, Jr., Boulder, Colo., and Jonathan I. Siann, San Diego, Calif., assignors to Conexant Systems, Inc., Newport Beach, Calif.

Filed Mar. 23, 1998, Appl. No. 46,011
Int. Cl. G01R *31/28;31/303*
U.S. Cl. 324—763 **16 Claims**



1. A system for testing a microelectronic circuit that includes a plurality of test portions configured to emit electromagnetic response signals in response to a predetermined signal, the system comprising:

a signal source for wirelessly applying said predetermined signal to said microelectronic circuit; and

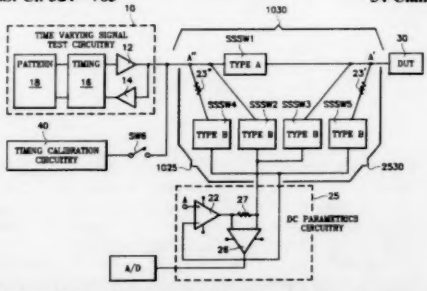
a test probe for wirelessly receiving said electromagnetic response signals from said plurality of test portions of said microelectronic circuit mounted on a test bed, wherein each of the test portions uses a different frequency to transmit said electromagnetic response signals such that each frequency corresponds to a different test portion, and wherein the test probe comprises an electromagnetic receiver configured to detect said electromagnetic response.

US 6,331,783 B1

CIRCUIT AND METHOD FOR IMPROVED TEST AND CALIBRATION IN AUTOMATED TEST EQUIPMENT

Steven Hauptman, Camarillo, Calif., assignor to Teradyne, Inc., Boston, Mass.

Filed Oct. 19, 1999, Appl. No. 420,497
Int. Cl. G01R *15/12*
U.S. Cl. 324—765 **34 Claims**



1. A switching circuit for testing and calibration in automated test equipment comprising:

a) a time varying signal channel having a time varying signal circuit end and a device under test end, the time varying signal channel comprising a series-connected solid state switch;

b) a DC test channel connected to the time varying signal channel between the series-connected solid state switch and the device under test end, the DC test channel comprising at least one solid state switch interposed along the DC test channel so as to provide switchable coupling between a DC parametrics circuit side of the DC test channel and the time varying signal channel; and

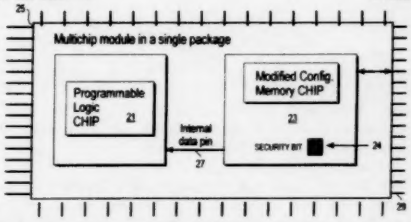
c) a signal level calibration channel connected to the time varying signal channel between the series-connected solid state switch and the time varying signal circuit end, the signal level calibration channel comprising at least one solid state switch interposed along the signal level calibration channel so as to provide switchable coupling between a DC parametrics circuit side of the signal level calibration channel and the time varying signal channel.

US 6,331,784 B1

SECURE PROGRAMMABLE LOGIC DEVICE

Martin T. Mason, San Jose; Nancy D. Kunnari, Sunnyvale, and Harry H. Kuo, San Jose, all of Calif., assignors to Atmel Corporation, San Jose, Calif.

Filed Jul. 28, 2000, Appl. No. 627,351
Int. Cl. H03K *19/00;* **H04L** *9/00*
U.S. Cl. 326—8 **4 Claims**



1. A secure programmable logic integrated circuit system, comprising:

a multi-chip module having external pins;

a programmable logic chip mounted in said multi-chip module and in communication with said external pins; and

a configuration memory chip mounted in said multi-chip module, the configuration memory chip storing configuration data for programming a configuration of said programmable logic chip via a data transfer connection internal to said multi-chip module, the configuration memory in communication with said external pins for program and erase commands and configuration data to be stored in said configuration memory chip,

wherein said configuration memory chip includes a security bit, said security bit having a first state in which configuration data may be programmed and read-back through said external pins of said multi-chip module, said security bit having a second state in which only an erase command can be communicated via said external pins and in which said internal data transfer connection is enabled.

US 6,331,785 B1

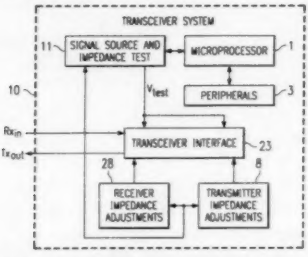
POLLING TO DETERMINE OPTIMAL IMPEDANCE

Eric J. Swanson, Buda, and Diwakar Vishakhadatta, Austin, both of Tex., assignors to Cirrus Logic, Inc., Austin, Tex.

Provisional application No. 60/178,535, filed on Jan. 26, 2000. This application Aug. 18, 2000, Appl. No. 641,479.

Int. Cl. H03K *17/14*

U.S. Cl. 326—30 **20 Claims**



1. A signal interface circuit for receiving a first communication signal on a first communication line and for transmitting a second communication signal on a second communication line, said signal interface circuit comprising:

(a) an input for receiving said first communication signal from said first communication line;

(b) an output for transmitting said second communication signal upon said second communication line;

(c) a first impedance adjustment circuit connected to said input and operable to adjust the impedance of said input as it appears to said first communication line;

(d) a second impedance adjustment circuit connected to said output and operable to adjust the impedance of said output as it appears to said second communication line; and

(e) a control circuit connected to said first and second impedance adjustment circuits.

US 6,331,786 B1

TERMINATION CIRCUITS AND METHODS THEREFOR

Adam Whitworth, Sunnyvale, and Dominick Richiuso, Saratoga, both of Calif., assignors to California Micro Devices Corporation, Milpitas, Calif.

Continuation-in-part of application No. 09/605,919, filed on Jun. 28, 2000, which is a continuation of application No. 09/433,522, filed on Nov. 3, 1999, now Pat. No. 6,100,713, which is a continuation of application No. 09/074,525, filed on May 7, 1998, now Pat. No. 6,008,665, Provisional application No. 60/046,331, filed on May 7, 1997. This application Nov. 2, 2000, Appl. No. 705,414.

Int. Cl. H03K *19/003;19/0175*

U.S. Cl. 326—30 **25 Claims**

1. A active termination circuit for terminating a signal traversing on a transmission line having a selective DC power consumption, comprising:

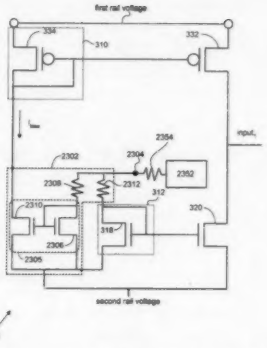
a first clamping transistor coupled to a first potential having a first clamping transistor control node arranged for clamping said signal at about a first reference voltage;

a first threshold reference transistor coupled to a first reference voltage supply configured to supply a first reference voltage, wherein the first threshold reference transistor provides a first bias voltage to said first clamping transistor control node that biases said first clamping transistor control node at about a first threshold voltage from said first reference voltage, said first threshold voltage representing a threshold voltage of said first clamping transistor;

a second clamping transistor coupled to a second potential having a second clamping transistor control node arranged for clamping said signal at about a second reference voltage; and

a second threshold reference transistor coupled to a second reference voltage supply configured to supply a second reference voltage, wherein said second threshold reference transistor provides a second bias voltage to said second clamping transistor control node that biases said second clamping transistor control node at about a second threshold voltage from said second reference voltage, said second threshold voltage representing a second clamping transistor threshold voltage; and

a variable current supply coupled to said first threshold reference transistor and said second threshold reference transistor arranged to reduce the DC power consumption of the active termination circuit as needed.



US 6,331,787 B1

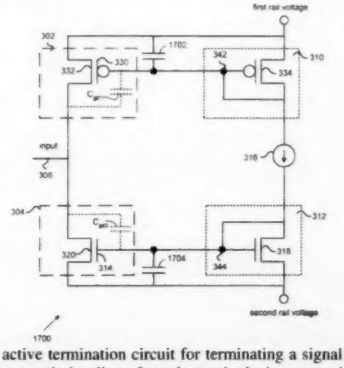
TERMINATION CIRCUITS AND METHODS THEREFOR

Adam Whitworth, Sunnyvale, and Dominick Richiuso, Saratoga, both of Calif., assignors to California Micro Devices Corporation, Milpitas, Calif.

Continuation-in-part of application No. 09/605,919, filed on Jun. 28, 2000, which is a continuation of application No. 09/433,522, filed on Nov. 3, 1999, now Pat. No. 6,100,713, which is a continuation of application No. 09/074,525, filed on May 7, 1998, now Pat. No. 6,008,665, Provisional application No. 60/046,331, filed on May 7, 1997. This application Nov. 2, 2000, Appl. No. 706,237.

Int. Cl. H03K *19/003;19/0175*

U.S. Cl. 326—30 **22 Claims**



1. An active termination circuit for terminating a signal traversing on a transmission line of an electronic device, comprising:

a bottom clamping transistor coupled to a first potential having a bottom clamping transistor control node arranged for clamping said signal at about a first reference voltage;

a bottom threshold reference transistor coupled to a first reference voltage supply configured to supply the first reference voltage, wherein the bottom threshold reference transistor provides a first bias voltage to said bottom clamping transistor

control node that biases said bottom clamping transistor control node at about a first threshold voltage above said first reference voltage, said first threshold voltage representing a threshold voltage of said bottom clamping transistor;

a top clamping transistor coupled to a second potential having a top clamping transistor control node arranged for clamping said signal at about a second reference voltage;

a top threshold reference transistor coupled to a second reference voltage supply configured to supply the second reference voltage, wherein said top threshold reference transistor provides a second bias voltage to said top clamping transistor control node that biases said top clamping transistor control node at about a second threshold voltage below said second reference voltage, said second threshold voltage representing a top clamping transistor threshold voltage;

a first stabilizing capacitor coupled between said bottom clamping transistor control node and a first stable voltage supply; and

a second stabilizing capacitor coupled between said top clamping transistor control node and second stable voltage supply.

US 6,331,788 B1

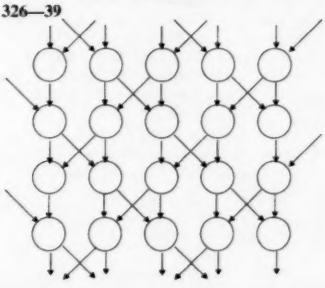
SIMPLIFIED CELLULAR ARRAY STRUCTURE FOR PROGRAMMABLE BOOLEAN NETWORKS

James C. Lyke, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 3, 2001, Appl. No. 681,980

Int. Cl. H03K *19/177*

U.S. Cl. 326—39 **2 Claims**



1. A field programmable gate array (FPGA) having a 2-input Boolean look-up-table-based (2LUT-based) architecture comprising:

a. one or more arrays (tiles), each comprised of a plurality of LUTs arranged in a directed, repeatable x-column, y-row grid propagating in the positive y direction, with each LUT having only nearest neighbor connections to other LUTs and not any other bridging structures except at the boundaries, the definition of each LUT behavior in a tile being allowed to be distinct and individually programmable for a particular logic function;

b. each of said tiles having no specialized routing structures, since logic functions can imitate wiring from any LUT input to an output, allowing the LUTs to emulate both logic and (virtual) wiring; and

c. periodic, alternating neighborhood templates in both horizontal and vertical directions for all LUTs in a particular tile.

US 6,331,789 B2

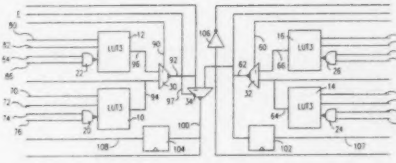
SEMICONDUCTOR DEVICE

Zvi Or-Bach, Sunnyvale, Calif., assignor to eASIC Corporation, San Jose, Calif.

Continuation of application No. 09/310,962, filed on May 13, 1999, now Pat. No. 6,236,229. This application Jan. 10, 2001, Appl. No. 756,903.

Int. Cl. H03K *7/38*

U.S. Cl. 326—39 **20 Claims**



1. A customizable logic array device comprising:

an array of programmable cells having a multiplicity of inputs and a multiplicity of outputs; and

customized interconnections overlying at least a portion of said programmable cell for permanently interconnecting at least a plurality of said multiplicity of inputs and at least a plurality of said multiplicity of outputs.

US 6,331,790 B1

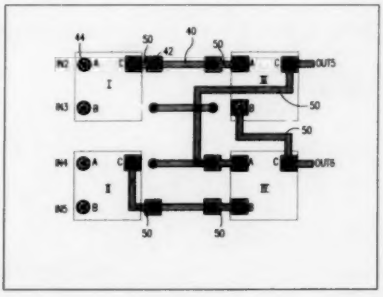
CUSTOMIZABLE AND PROGRAMMABLE CELL ARRAY

Zvi Or-Bach, San Jose; Ze'ev Wurman, Palo Alto; Richard Zeman, San Jose, and Laurance Cooke, Los Gatos, all of Calif., assignors to eASIC Corporation, San Jose, Calif.

Continuation-in-part of application No. PCT/IL00/00149, filed on Mar. 10, 2000. This application Sep. 11, 2000, Appl. No. 659,783.

Int. Cl. H03K *19/177*

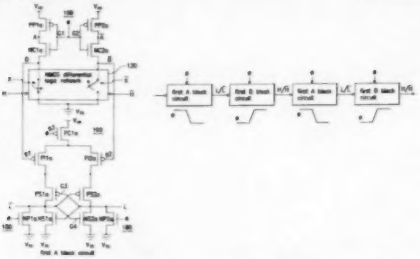
U.S. Cl. 326—41 **23 Claims**



1. A semiconductor device comprising:

a logic array including a multiplicity of identical logic cells, each identical logic cell comprising at least one look-up table, metal connection layers overlying the multiplicity of identical logic cells for providing at least one permanent customized direct interconnect between various inputs and outputs thereof.

US 6,331,791 B1
CHARGE-REDISTRIBUTION LOW-SWING DIFFERENTIAL LOGIC CIRCUIT
Hong-Yi Huang, Taipei, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed Oct. 5, 2000, Appl. No. 679,847
Claims priority, application Taiwan, Oct. 6, 1999, 088117197
Int. Cl. H03K *19/096*
U.S. Cl. 326—98 **15 Claims**



1. A charge-redistribution low-swing differential logic circuit comprising:

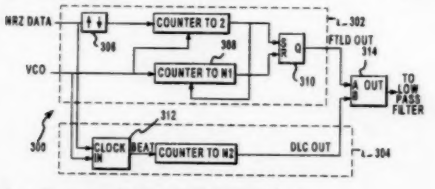
a charge-redistribution circuit including a first CMOS transistor and a second CMOS transistor, each coupled to a first potential terminal, wherein the gates of two CMOS transistors are coupled together to receive a clock pulse which is used to control the first and second CMOS transistors, thereby outputting a first complementary signal pair;

a differential logic network having a first train of a plurality of nodes and a second train of a plurality of nodes, each train being respectively coupled between one of the first complementary signal pair and a second potential terminal, wherein one of the first complementary signal pair performs the charge-redistribution with one of the two trains of a plurality of nodes, and there is an input voltage difference between the first and second potential;

a sense amplifier, coupled between the first and second potential, which is controlled by the clock pulse to sense and amplify the voltage difference of the first complementary signal pair, then to output a second complementary signal pair; and

a precharge circuit, controlled by the clock pulse, and used by the sense amplifier before sensing for precharging terminals of the second complementary signal pair to a third potential with a value between the first and second potential.

US 6,331,792 B1
CIRCUIT AND METHOD FOR UNLIMITED RANGE FREQUENCY ACQUISITION
David Tonietto, Laguna Niguel, Calif., assignor to Conexant Systems, Inc., Newport Beach, Calif.
Filed Jun. 30, 2000, Appl. No. 609,569
Int. Cl. G01R *23/02*
U.S. Cl. 327—48 **9 Claims**



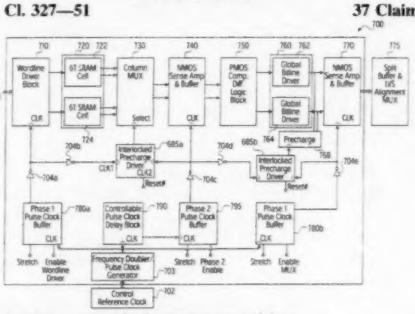
1. A frequency detector circuit comprising:

a frequency too low detector (FTLD) configured to receive an incoming data pulse and a clock pulse, said incoming data pulse having a center frequency, said FTLD configured to detect and count the rise and fall edges of said incoming data pulse and the rising edges of said clock pulse, said FTLD further configured to generate a bit pulse, said bit pulse set high when said clock pulse has a slower rate than said incoming data pulse;

a dynamic leakage circuit (DLC) configured to sample said clock pulse with said incoming data pulse, to determine a beat frequency, and to generate a bit pulse, said bit pulse set high when said beat frequency is greater than a predetermined threshold; and

a multiplexer (MUX) configured to receive said bit pulses from said FTLD and said DLC, said MUX programmed to output a bit indicating the status of said clock pulse in relation to said incoming data pulse.

US 6,331,793 B1
APPARATUS, METHOD AND SYSTEM FOR PULSE PASSGATE TOPOLOGIES
Thomas D. Fletcher, Portland, Oreg., and Xia Dai, San Jose, Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Dec. 30, 1999, Appl. No. 476,285
Int. Cl. G11C *7/06*
U.S. Cl. 327—51 **37 Claims**



1. A pulse-passgate-logic system comprising:

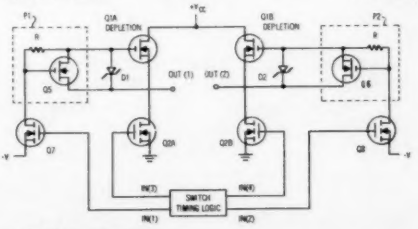
a pulse clock circuit arrangement to provide a pulse clock having a phase;

at least another pulse clock circuit arrangement to provide at least another pulse clock having at least another phase;

at least one passgate logic arrangement that is coupled to one of the pulse clock circuit arrangement and the at least another pulse clock circuit arrangement; and

at least one sense-amplifier arrangement that is coupled to the at least one passgate logic arrangement and to one of the pulse clock circuit arrangement and the at least another pulse clock circuit arrangement.

US 6,331,794 B1
PHASE LEG WITH DEPLETION-MODE DEVICE
Richard A. Blanchard, 10724 Mora Dr., Los Altos, Calif. 94024
Provisional application No. 60/123,725, filed on Mar. 10, 1999. This application Mar. 9, 2000, Appl. No. 521,487.
Int. Cl. H03K *1/00;17/56*
U.S. Cl. 327—112 **21 Claims**



1. A circuit comprising:

a first reference voltage connected to a first drive element;

a second reference voltage connected to a second drive element;

a third reference voltage having a polarity opposite that of the first reference voltage;

a switch having a first terminal connected to the third reference voltage and a second terminal connected to a gate of the first drive element;

the first and second drive elements connected to a load node to selectably pull said load node toward first and second reference voltages respectively, said load node having a third voltage;

said first drive element comprising a depletion-mode power device, which is in its "off" state whenever the third reference voltage is applied to the gate terminal via the switch.

US 6,331,795 B1

LOCK DETERMINATION CIRCUIT OF PLL FOR PULLING UP INTERMEDIATE ELECTRIC POTENTIAL OF LOCK DETERMINATION GATE

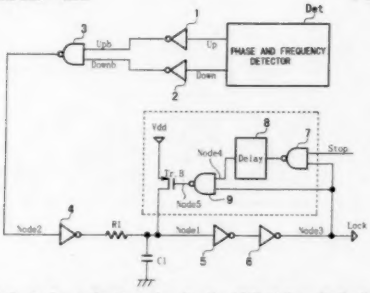
Kenichi Nogi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 16, 1999, Appl. No. 461,411

Claims priority, application Japan, Dec. 21, 1998, 10-363576

Int. Cl. H03L *7/06*

U.S. Cl. 327—156 **3 Claims**



1. A lock determination circuit of a PLL (phase-locked loop), said PLL including a phase and frequency detector for comparing a reference signal and a comparison signal and outputting a detection pulse signal according to a difference between the reference and comparison signals, said lock determination circuit determining a lock state of an input signal to the PLL based on the detection pulse signal said lock determination circuit comprising:

a lock determination gate whose input level has an intermediate electric potential for a period after the lock state is determined; and

a pull-up circuit which immediately pulls up the input level of the lock determination gate by an intermediate potential after the lock state is determined, so as to reduce a current flowing through the lock determination gate.

US 6,331,796 B1

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING TRANSISTOR LOGIC AND LOAD CIRCUITS

Mototsugu Hamada, Kohoku-Ku, and Tadahiro Kuroda, Sumida-Ku, both of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation of application No. 09/226,954, filed on Jan. 8, 1999, now abandoned. This application Nov. 13, 2000, Appl. No. 711,329.

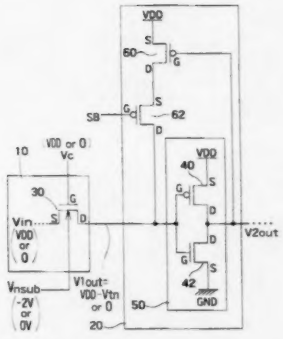
Claims priority, application Japan, Jan. 29, 1998, 10-017228

Int. Cl. H03K *3/356*

U.S. Cl. 327—208 **19 Claims**

1. A semiconductor integrated circuit device comprising:

a pass-transistor logic circuit having at least one n-type MOS transistor forming a logic circuit to supply a logic output signal; and



a load circuit having a CMOS inverter including a p-type MOS transistor forming the CMOS inverter and an n-type MOS transistor forming the CMOS inverter which are connected in series between a first power source and a second power source, said p-type MOS transistor forming the COMS inverter and said n-type MOS transistor forming the CMOS inverter having gate terminals supplied with said logic output signal forming the input of said CMOS inverter, said p-type MOS transistor forming the CMOS inverter and said n-type MOS transistor having a common connected point from which a load output signal is output and which forms the output of said CMOS inverter, the threshold voltage value Vtn of said n-type MOS transistor forming the CMOS inverter being substantially equal to the threshold voltage value Vtn of said n-type MOS transistor forming the logic circuit, and said p-type MOS transistor forming the CMOS inverter having the threshold voltage value whose absolute value |Vtp| is larger than the threshold voltages Vtn of the n-type MOS transistor forming the logic circuit and the n-type MOS transistor forming the CMOS inverter; and

wherein said load circuit further comprises a feedback mechanism including a p-type MOS transistor for feedback purposes having a source terminal connected to said first power source, a gate terminal connected to the output of the CMOS inverter and a drain terminal connected to the input of the CMOS inverter;

wherein said feedback mechanism does not function when said pass-transistor logic circuit is in its operative mode, but supplies said first power source to the input of the CMOS inverter when said pass-transistor logic circuit is in its non-operative mode and the logic output signal is high level.

US 6,331,797 B1

VOLTAGE TRANSLATOR CIRCUIT

Nicolaas Lambert, Waalre, Netherlands, assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Nov. 23, 1999, Appl. No. 447,543

Int. Cl. H03L *5/00*

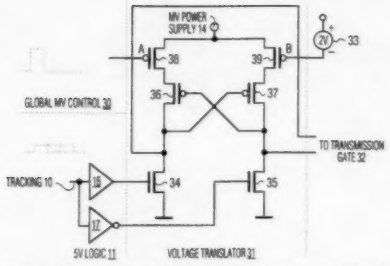
U.S. Cl. 327—333 **10 Claims**

1. A voltage translator circuit for employing a control signal referenced to a first reference voltage to switch a drive output referenced to a second reference voltage, comprising:

(a) a pair of pull down devices, receiving a control signal as a respective one of a pair of complementary signals;

(b) a pair of pull up devices, each in series with a respective one of the pair of pull down devices, and each being driven by a respective positive feedback signal reflecting a state of conduction of the respective pull up device; and

(c) current blocking devices, in series with a respective one of the pair of pull up devices, at least one of which having a



control input for selectively impeding a current flowing in series to a respective pull down device,

wherein one of the pair of current blocking devices has a static control input limiting a current flow therethrough and the other of the pair of current blocking devices has an active control input for selectively modulating a flow therethrough in dependence thereon.

US 6,331,798 B1

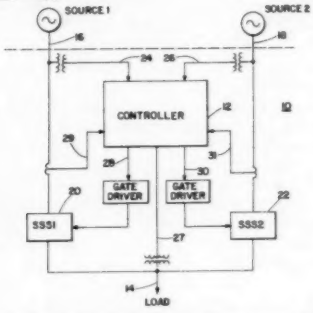
CONTROL ARRANGEMENT AND METHOD FOR HIGH-SPEED SOURCE-TRANSFER SWITCHING SYSTEM

Raymond P. O'Leary; Michael G. Ennis, both of Evanston; Joseph W. Ruta, Arlington Heights, and Anthony F. Segredo, Streamwood, all of Ill., assignors to S&C Electric Company, Chicago, Ill.

Provisional application No. 60/131,856, filed on Apr. 29, 1999. This application Apr. 24, 2000, Appl. No. 556,261.

Int. Cl. H03K *17/73*

U.S. Cl. 327—470 **9 Claims**



1. A control arrangement for a source-transfer switching system of the type that includes first and second solid-state switches having respective first and second control inputs, input source connections and output connections, the output connections connected to a common load circuit connection, the control arrangement comprising:

transfer control means for controlling the first and second solid-state switches via the first and second control inputs so as to selectively supply the common load circuit connection via either the first or second solid-state switch, said transfer control means further comprising first means for selectively transferring control between the first and second solid-state switches when the incoming voltage differential across the solid-state switch to be turned on is sufficient to establish an initial current flow that is in opposition to the current flow in the solid-state switch to be turned off, and second means for selectively transferring control whenever it is possible to establish that the switch to be turned off will remain off.

US 6,331,799 B1

BIAS CIRCUIT FOR CONTROL INPUT OF POWER TRANSISTOR

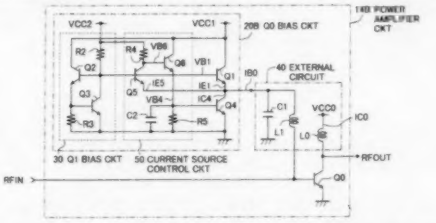
Naoyuki Miyazawa, Yamanashi-ken, Japan, assignor to Fujitsu Quantum Devices Limited, Yamanashi, Japan

Filed Feb. 11, 2000, Appl. No. 502,469

Claims priority, application Japan, Feb. 26, 1999, 11-051772

Int. Cl. G05F *1/10*

U.S. Cl. 327—538 **21 Claims**



1. A bias circuit for a control input of a power transistor, said bias circuit comprising an output transistor having a current path, one end of said current path providing a bias to said control input, said bias circuit further comprising:

a current source, serially connected to said one end of said current path, having a control input, for flowing a current depending on a first potential at said control input thereof; and

a current source control circuit, for detecting a second potential that changes depending on a change in current of said current path, for controlling said first potential in response to said second potential so that a current flowing to said current source changes in reverse to said current change of said current path in order to maintain a sum of a current flowing to said control input of said power transistor and to said current source approximately constant.

US 6,331,800 B1

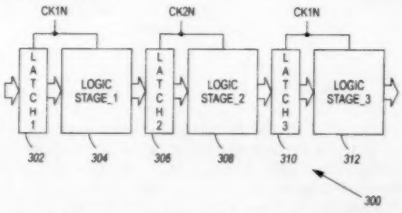
POST-SILICON METHODS FOR ADJUSTING THE RISE/FALL TIMES OF CLOCK EDGES

Rajakrishnan Radjassamy, Plano, Tex., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 21, 2000, Appl. No. 620,932

Int. Cl. H01L *25/00*

U.S. Cl. 327—566 **17 Claims**



1. A post-silicon method for eliminating races in an integrated circuit, comprising:

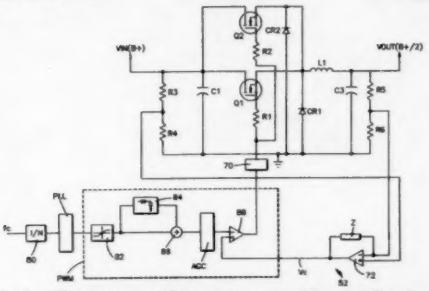
a) testing said integrated circuit for races; and

b) if a clock-signal produced by said integrated circuit is deemed to be a cause of races, clipping at least one transistor region from an output driver of a clock gater which produces the clock signal, said clipping being performed by reconstructing at least one mask which is used to define the output driver during fabrication of the integrated circuit.

US 6,331,801 B1
RF AMPLIFIER SYSTEM HAVING AN IMPROVED POWER SUPPLY

Philip Charles Schmitt, and Ky Thoai Luu, both of Quincy, Ill., assignors to Harris Corporation, Melbourne, Fla.

Filed Apr. 7, 2000, Appl. No. 545,023
Int. Cl. H03F *3/38*
U.S. Cl. 330—10 **19 Claims**



1. An RF power amplifier system, comprising a DC voltage source for providing an input DC voltage; an RF source for providing an RF carrier signal; an RF amplifier for amplifying said carrier signal; a DC to DC power supply for supplying operating voltage to said RF amplifier wherein said operating voltage exhibits a desired percentage of said input voltage, said supply comprising:

a low pass filter including a capacitor;

a switching device periodically turned on by turn on pulses for periodically applying said input voltage to said filter to provide an output voltage across said capacitor;

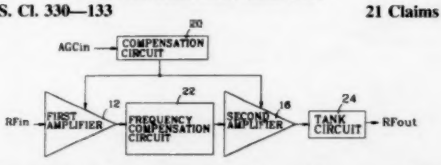
a pulse generator for providing said turn on pulses at a frequency synchronized to the frequency of said carrier signal and exhibiting a duty cycle that varies as a function of the value of a control signal; and,

a comparator that compares said input voltage with said output voltage and provides said control signal with a value that varies as a function of said comparison.

US 6,331,802 B1
LINEAR GAIN CONTROL AMPLIFIER

Seong-Ryeol Kim, Choongcheongbuk-Do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-Do, Rep. of Korea

Filed Feb. 1, 2000, Appl. No. 496,216
Claims priority, application Rep. of Korea, Mar. 26, 1999, 99-10528
Int. Cl. H03G *3/20;* **H03F** *3/191*
U.S. Cl. 330—133 **21 Claims**



1. A linear gain control amplifier for providing an amplified output signal, comprising:

a compensation circuit for receiving an AGC signal and outputting a compensation signal approximating an exponential function of the AGC signal;

a first amplifier for amplifying an input signal in accordance with the compensation signal to provide a first output signal;

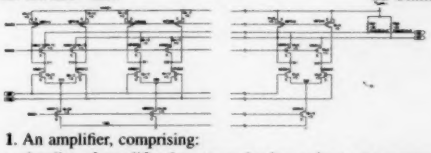
a frequency compensation circuit receiving the first output signal and providing a second output signal compensated for a phase shift in the output signal of the first amplifier, the frequency compensation circuit including a high pass filter; and

a second amplifier for amplifying the second output signal in accordance with the compensation signal from the compensation circuit to provide a third output signal.

US 6,331,803 B1
CONSTANT BANDWIDTH, VARIABLE GAIN AMPLIFIER, AND METHOD

Zhiliang Zheng, San Jose, and Steven C. Lam, Cupertino, both of Calif., assignors to Marvell International Ltd, Hamilton, Belgium

Filed May 8, 2000, Appl. No. 566,861
Int. Cl. H03F *3/45*
U.S. Cl. 330—254 **22 Claims**



1. An amplifier, comprising:

a plurality of amplification stages having at least one common output node; and

a switch mechanism for each stage that controls the gain of that stage;

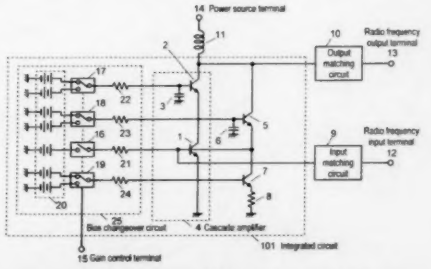
wherein the switch mechanisms are selectively controllable to vary the gain of the amplifier while maintaining substantially constant bandwidth,

wherein each amplification stage includes a first pair of input transistors, and a first pair of cascoded transistors each coupled to a respective one of the corresponding input transistors.

US 6,331,804 B1
AMPLIFIER AND RADIO COMMUNICATION APPARATUS USING THE SAME

Yoshito Shimizu; Noriaki Saito, and Hiroyuki Yabuki, all of Kanagawa, Japan, assignors to Matsushita Electric Industria, Co., Ltd., Osaka, Japan

Filed Jan. 19, 2000, Appl. No. 487,849
Claims priority, application Japan, Jan. 19, 1999, 11-010147; Jun. 15, 1999, 11-167920; Nov. 8, 1999, 11-316742
Int. Cl. H03G *3/30*
U.S. Cl. 330—285 **12 Claims**



1. An amplifier, being a variable amplifier for obtaining a variable gain by changing over signal lines having different gains, comprising:

a first signal line having a cascade amplifier,

a second signal line having a base-grounded amplifier, and

control terminals provided independently in said cascade amplifier and said base-grounded amplifier,

wherein one of said first line and said second signal line is selected by using said control terminals so that the gain is varied.

US 6,331,805 B1

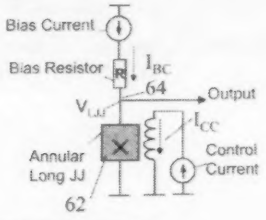
ON-CHIP LONG JOSEPHSON JUNCTION (LJJ) CLOCK TECHNOLOGY

Deepnarayan Gupta, Hawthorne, N.Y., and Yongming Zhang, San Diego, Calif., assignors to Hypres, Inc., Elmsford, N.Y., and Conductus, Inc, Sunnyvale, Calif.

Provisional application No. 60/174,694, filed on Jan. 6, 2000. This application Jun. 22, 2000, Appl. No. 599,734.

Int. Cl. H03B *15/00;* **H03K** *3/38;* **H01L** *39/22*

U.S. Cl. 331—107 S **26 Claims**



1. An oscillator circuit comprising:

a long Josephson Junction (LJJ);

means for supplying a bias current to the LJJ;

means for supplying a control current and magnetically coupling the current to the LJJ for causing the LJJ to generate pulse signals; and

at least one connection to the LJJ for obtaining pulse signals from the LJJ.

US 6,331,806 B1

MICROWAVE CIRCUIT PACKAGE AND EDGE CONDUCTOR STRUCTURE

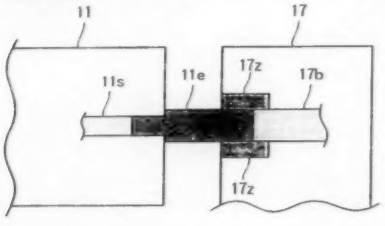
Masahito Shingyoji, and Nobuyoshi Takeuchi, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/844,921, filed on Apr. 22, 1997, now Pat. No. 5,936,492. This application Jul. 15, 1999, Appl. No. 354,213.

Claims priority, application Japan, Apr. 24, 1996, 8-102814

Int. Cl. H01P *5/00*

U.S. Cl. 333—33 **4 Claims**



2. A microwave circuit package including a metallic substrate and sealing therein a microwave circuit mounted to said metallic substrate, said microwave circuit package further comprising:

a dielectric substrate having a strip conductor having a width and mounted to said metallic substrate in a sealed fashion;

a ribbon having a width connected to a high frequency input of said microwave circuit;

said ribbon having opposed ends and a central portion, one of said opposed ends proximate to said microwave circuit having a width substantially equal to the width of said high-frequency input of said microwave circuit, the other of said opposed ends proximate to said dielectric substrate having a width substantially equal to the width of said strip conductor; and said central portion between said opposed ends having a thickness greater than the thickness of each of said ends,

a high frequency impedance regulating compensating circuit disposed on said dielectric substrate in close proximity to the bonding portion of said ribbon, the bonding portion being at an end thereof.

US 6,331,807 B1

MICROWAVE COUPLER FOR A MONOLITHIC INTEGRATED CIRCUIT

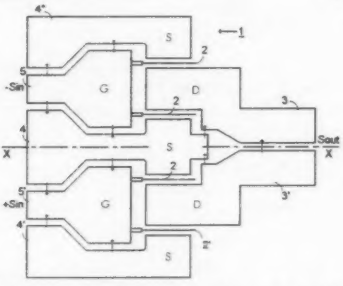
Didier Prieto, Toulouse; Eric Rogeaux, Plaisance du Touch; Jean-Francois Villemazet, Cintegabelle, and Thierry Parra, Toulouse, all of France, assignors to Alcatel, Paris, France

Filed Oct. 4, 1999, Appl. No. 411,227

Claims priority, application France, Oct. 5, 1998, 98 12433

Int. Cl. H03H *5/00;* **H01P** *3/08;1/00*

U.S. Cl. 333—128 **9 Claims**



1. A balanced and active coplanar microwave coupler for an MMIC, said coupler comprising:

a plurality of FETs provided with metal grid, source, and drain electrodes, said grid, source and drain electrodes comprising coplanar metal elements combined to constitute the inlet and outlet accesses of the coupler,

wherein all of the accesses are constituted by one or more coplanar striplines (CPS) and one or more coplanar waveguides (CPW) formed by said coplanar elements.

US 6,331,808 B2

DIELECTRIC RESONATOR DEVICE

Shigeyuki Mikami, Nagaokakyo; Toshiro Hiratsuka, Kusatsu, and Tomiya Sonoda, Muko, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of application No. 09/283,803, filed on Apr. 1, 1999, now Pat. No. 6,177,854. This application Dec. 13, 2000, Appl. No. 736,484.

Claims priority, application Japan, Apr. 3, 1998, 10-91986; Mar. 9, 1999, 11-062217

Int. Cl. H01P *5/12;1/20;7/10*

U.S. Cl. 333—134 **40 Claims**

1. A dielectric resonator device comprising:

a dielectric plate;

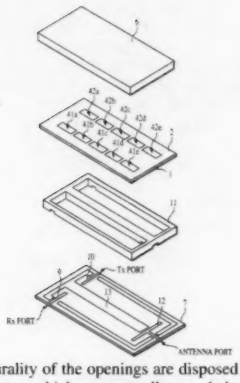
an electrode disposed on each main surface of the plate;

at least one pair of substantially-polygonal mutually-opposing openings formed in the electrodes, each of said openings defining a longer side direction and a shorter side direction;

a signal input unit for inputting signals from the outside by coupling with a resonator formed of the electrode openings; and

a signal output unit for outputting signals to the outside by coupling with the resonator;

wherein the length L in the longer side direction of at least one of the openings is longer than a half-wave length of a basic resonant mode determined by a half-wave length in the resonant frequency used, so as to resonate in a higher mode of the basic resonant mode;



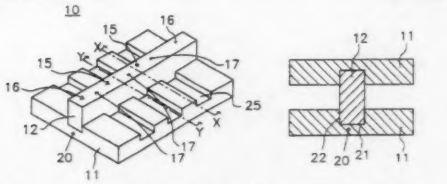
wherein a plurality of the openings are disposed to form respective resonators which are mutually coupled with each other, and pairs of the openings with different lengths L are included.

US 6,331,809 B1

NONRADIATIVE DIELECTRIC WAVEGUIDE RESONATOR, NONRADIATIVE DIELECTRIC WAVEGUIDE FILTER, DUPLEXER AND TRANSCEIVER INCORPORATING THE SAME

Ikuo Takakuwa, Suita; Toru Tanizaki, Kyoto, and Toshiro Hiratsuka, Kusatsu, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 10, 1999, Appl. No. 330,113
Claims priority, application Japan, Jun. 10, 1998, 10-162354
Int. Cl. H01P *3/16; 1/213*
U.S. Cl. 333—135 **11 Claims**



1. A nonradiative dielectric waveguide resonator comprising:

a pair of opposing planar conductors;

a dielectric strip disposed therebetween and having a signal-transmitting direction;

at least one resonance region provided within said dielectric strip; and

cut-off regions provided within the dielectric strip on both sides of the resonance region so as provide alternating regions of resonance and cut-off in the signal-transmitting direction of the dielectric strip.

US 6,331,810 B1

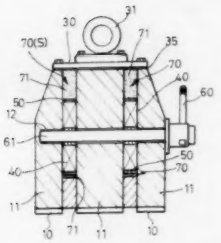
MAGNETIC LIFTING APPARATUS

Hyung Jung, Byucksan Apt. 122-904, Gaya 2-dong, Pusanjin-ku, Pusan, Rep. of Korea, 614-808

Filed Sep. 1, 2000, Appl. No. 653,895
Int. Cl. B66C *1/04;* **H01F** *7/04*
U.S. Cl. 335—288 **12 Claims**

1. A magnetic lifting apparatus by using neodymium magnets, comprising:

a plurality of polarity plates disposed with a predetermined interval and having non-magnetic medium in the longitudinal center;



a plurality of interval members disposed between the polarity plates;

a top cover covering the interval members and the polarity plates;

at least one pair of neodymium magnets having S/N polarity in opposite and disposed between the polarity plates;

at least one rotor rotatably mounted with the neodymium magnets inserted therein;

a switch handle for switching polarity position of the rotor and the neodymium magnets engaged therewith to switchably generate magnetic attraction; and

oxidation prevention means disposed around the neodymium magnets, for preventing the neodymium magnets from being in contact with oxygen,

wherein said oxidation prevention means includes a vacuum hollow space around the neodymium magnet.

6. A magnetic lifting apparatus by using neodymium magnets, comprising:

a plurality of polarity plates disposed with a predetermined interval and having non-magnetic medium in the longitudinal center;

a plurality of interval members disposed between the polarity plates;

a top cover covering the interval members and the polarity plates;

at least one pair of neodymium magnets having S/N polarity in opposite and disposed between the polarity plates;

at least one rotor rotatably mounted with the neodymium magnets inserted therein;

a switch handle for switching polarity position of the rotor and the neodymium magnets engaged therewith to switchably generate magnetic attraction; and

oxidation prevention means disposed around the neodymium magnets, for preventing the neodymium magnets from being in contact with oxygen,

wherein said oxidation prevention means includes a hollow space around the rotor and filled with an oxidation prevention material in a liquid state.

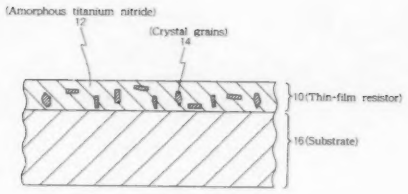
US 6,331,811 B2

THIN-FILM RESISTOR, WIRING SUBSTRATE, AND METHOD FOR MANUFACTURING THE SAME

Akinobu Shibuya, and Koji Matsui, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 7, 1999, Appl. No. 326,878
Claims priority, application Japan, Jun. 12, 1998, 10-165112; Jun. 17, 1998, 10-170313
Int. Cl. H01K *1/012*
U.S. Cl. 338—308 **18 Claims**

1. A thin-film resistor comprising a very thin film of a resistive material deposited over an insulating substrate, said thin film resistor being adapted for use with a supporting substrate having wiring in the form of a pattern of conductive material thereon, said supporting substrate being selected from a group consisting of an Si substrate with insulating layer, a printed circuit board, a built-up circuit board, a ceramic substrate, an organic film, a glass plate, a metal plate or foil with an insulating layer; said resistive material being an amorphous titanium nitride based composite deposited in



a thin layer on said insulative substrate, said composite having at least one form of titanium selected from a group consisting of crystal titanium nitride or crystal titanium in said amorphous titanium nitride matrix, and said resistive material having a low conductivity as compared to the conductivity of said conductive material forming said wiring.

US 6,331,812 B1

PROGRAMMABLE ELECTRONIC LOCKING DEVICE

Nofal Dawalibi, Riyad, Saudi Arabia, assignor to Electronic Key Systems (E.K.S.) S.A.R.L., Luxembourg, Luxembourg

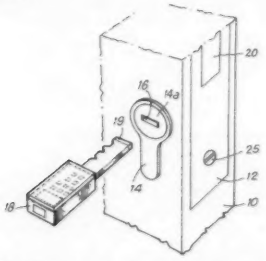
PCT No. PCT/FR96/00003, § 371 Date Jul. 21, 1997, § 102(e) Date Jul. 21, 1997, PCT Pub. No. WO96/23122, PCT Pub. Date Aug. 1, 1996

PCT Filed Jan. 3, 1996, Appl. No. 894,217

Claims priority, application France, Jan. 25, 1995, 95 00822

Int. Cl. G06F *7/00*

U.S. Cl. 340—5.2 **32 Claims**



1. A user programmable electronic closure system comprising:

a lock to be operated by a user with a key when an identification code of the lock and an identification code of the associated key are observed to match;

the lock including a cylinder provided with a portion in which at least one keyway is provided for receiving said key;

the cylinder including at least one electrical connection means, electronic control means including at least one reinscriptible memory means for storing at least one of a plurality of identification codes and connected to the at least one electrical connection means, and release means responsive to said electronic control means and designed to release the lock;

the key including first electrical connection means for cooperating with a second one of the at least one electrical connection means of the lock when the key is inserted in the corresponding keyway, first electronic control means including first reinscriptible memory means for storing at least one of a plurality of identification codes and connected to the first electrical connection means, and inputting means for a user to input a confidential code;

the electronic control means of the key and of the lock, and the cylinder release means being powdered by power supply means; and

the key including user programming means for the user to modify the data contained in each of the electronic control means of the key and of the lock under the control of the inputting means and without need of a manufacturer of the system and using the inputting means of the key.

US 6,331,813 B1

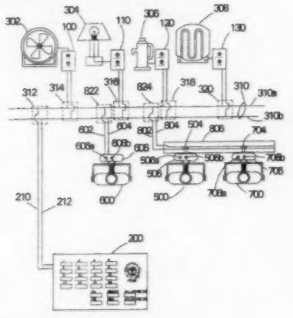
MULTIPARAMETER DEVICE CONTROL APPARATUS AND METHOD

Richard S. Belliveau, 10643 Floral Park, Austin, Tex. 78759

Filed May 25, 1999, Appl. No. 318,139

Int. Cl. H04M *11/04*

U.S. Cl. 340—310.01 **3 Claims**



1. An apparatus comprising:

a first lighting device having a plurality of parameters, wherein the first lighting device includes:

a processor, and

a first motor which is used to vary a first parameter of the plurality of parameters of the first lighting device;

wherein the first lighting device receives a primary signal having a frequency from a power line and the primary signal powers the first lighting device;

wherein the first lighting device receives a first secondary signal from power line in response to actuation of at least one actuation device on a control device and the first secondary signal has a frequency which is different from the frequency of the primary signal;

wherein the processor of the first lighting device responds to the first secondary signal by causing the position of the first motor to change and thereby changing the first parameter of the plurality of parameters of the first lighting device;

wherein the first secondary signal includes an address signal;

the processor of the first lighting device responds to the first secondary signal if the address signal of the first secondary signal corresponds to a first address;

the processor determines a second address from the first address;

the processor responds to the first secondary signal if the address signal of the first secondary signal corresponds to the second address;

and wherein the processor responds by changing a parameter of the plurality of parameters of the first lighting device.

US 6,331,814 B1

ADAPTER DEVICE FOR THE TRANSMISSION OF DIGITAL DATA OVER AN AC POWER LINE

Andre Albano, Saint Laurent du Var; Patrick Michel, La Gaude; Alain Benayoun, Cagnes-sur-Mer, and Jean-Francois Le Pennec, Nice, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 2000, Appl. No. 718,186

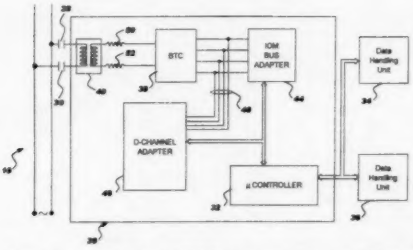
Claims priority, application European Pat. Off., Nov. 25, 1999, 99480126

Int. Cl. H04M *11/04*

U.S. Cl. 340—310.01 **12 Claims**

1. An adapter device for transmitting data from a local data-handling unit to a remote data-handling unit via an AC power line, the adapter device comprising:

processing facilities that receive digital data from a local data-handling unit and transform said digital data into Intergrated Services Digital Network (ISDN) data;



a burst transceiver circuit (BTC) that converts said ISDN data into low-voltage pseudo-ternary signals on a U interface; and

a transformer that transforms said low-voltage pseudo-ternary signals into high-voltage pseudo-ternary signals and transmits said high-voltage pseudo-ternary signals via an AC power line.

US 6,331,815 B1

DUAL-FREQUENCY MATCHING CIRCUIT

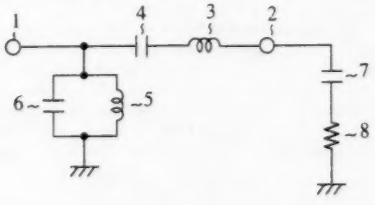
Takeshi Oshima; Hiromitsu Uchida, and Yasushi Itoh, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1999, Appl. No. 352,793

Claims priority, application Japan, Aug. 28, 1998, 10-243989

Int. Cl. H04M *11/04*

U.S. Cl. 340—310.05 **17 Claims**



1. A dual-frequency impedance matching circuit for exhibiting an equal impedance to two input signals of two different and arbitrarily selected frequencies, comprising:

a first series resonant LC circuit and a second parallel resonant LC circuit, connected between an input terminal at which an input signal is inputted, and an output terminal at which said input signal is outputted, wherein the values of the inductors and the capacitors of said LC circuits are chosen such that the impedance of said matching circuit seen by a first input signal of a low angular frequency ω_L is substantially the same as the impedance of said matching circuit seen by a second input signal of a high angular frequency ω_H.

US 6,331,816 B1

AUTOMATIC CONTROL SYSTEM FOR SECURITY APPARATUS BASED ON THE PRESENCE OF A USER

Matti Myllymäki, Espoo, Finland, assignor to IST International Security Technology Oy, Helsinki, Finland

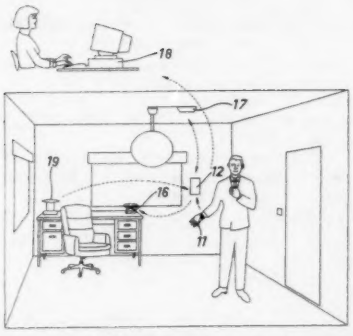
PCT No. PCT/FI98/00314, § 371 Date Nov. 6, 2000, § 102(e) Date Nov. 6, 2000, PCT Pub. No. WO99/53456, PCT Pub. Date Oct. 21, 1999

PCT Filed Apr. 9, 1998, Appl. No. 647,968

Int. Cl. G08B *21/00*

U.S. Cl. 340—540 **8 Claims**

1. An automatic control system for a security apparatus, comprising a portable transmitter unit and a receiver and control unit to be placed in a monitored space or target and provided with a



processor for processing the received data and with control outputs for connecting the security apparatus in a data transmission contact with communication and/or alarm equipment, characterized in that the transmitter unit supplies the receiver and control unit with messages indicating the presence of a user, that the receiver and control unit is provided with a detector which detects the opening of a door, and that the processor has a software which uses said presence message and the indication of a door being opened to compile information about whether the user is going out or coming in, and that the receiver and control unit automatically switches on a burglar monitor placed in a monitored space, as the receiver and control unit has verified that the user has left the monitored space.

US 6,331,817 B1

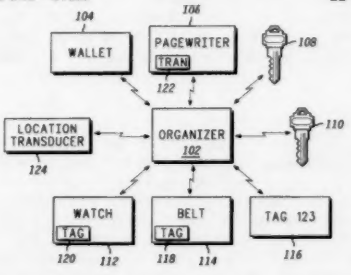
OBJECT TRACKING APPARATUS AND METHOD

Steven Jeffrey Goldberg, Fort Worth, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 31, 2000, Appl. No. 584,615

Int. Cl. G08B *23/00*

U.S. Cl. 340—573.1 **22 Claims**



1. A tracking apparatus comprising:

a tracked object interrogator producing a tracked object identifier output;

a location interrogator producing an apparatus location output corresponding to its proximity relative to a location transducer; and

an alarm which annunciates for a predetermined combination of the apparatus location output and the tracked object identifier output.

US 6,331,818 B1
HUMAN BODY DETECTING DEVICE AND METHOD THEREFOR

Tetsuo Hiraga, Tokushima, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

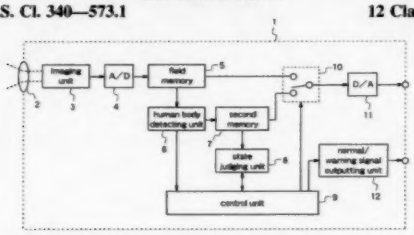
PCT No. PCT/JP00/00366, § 371 Date Nov. 30, 2000, § 102(e) Date Nov. 30, 2000, PCT Pub. No. WO00/45355, PCT Pub. Date Aug. 3, 2000

PCT Filed Jan. 25, 2000, Appl. No. 647,242

Claims priority, application Japan, Jan. 29, 1999, 11-022746

Int. Cl. G08B *23/00*

U.S. Cl. 340—573.1 **12 Claims**



1. A body detecting device comprising:

an imaging unit that is operable to capture an image of a combination of a body and an area surrounding the body, and that is operable to output an image signal comprising image data which is a combination of data corresponding to the body and data corresponding to the area surrounding the body;

a body detecting unit that is operable to differentiate the data corresponding to the body from the data corresponding to the area surrounding the body;

a judging unit that is operable to judge whether the body is in a normal state or an abnormal state;

a normal/warning signal outputting unit that is operable to output a normal signal when said judging unit judges the body is in a normal state, and that is operable to output a warning signal when said judging unit judges that the body is in an abnormal state;

a field memory that is operable to store the combination of data corresponding to the body and data corresponding to the area surrounding the body;

a second memory that is operable to divide, and store, the data corresponding to the body into blocked data which includes data corresponding to blocks of a predetermined number of pixels and luminance; and

a selector that is operable to authorize output of the combination of data corresponding to the body and data corresponding to the area surrounding the body from the field memory when said judging unit judges that the body is in an abnormal state, and that is operable to authorize output of the blocked data corresponding to the body from the second memory when said judging unit judges that the body is in a normal state.

US 6,331,819 B1
DEVICE AND METHOD FOR OPERATING A RAIN DETECTOR

Norbert Hog, Buehl, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE98/02511, § 371 Date Feb. 2, 2000, § 102(e) Date Feb. 2, 2000, PCT Pub. No. WO99/14087, PCT Pub. Date Mar. 25, 1999

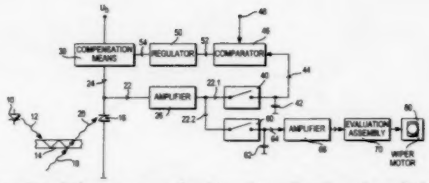
PCT Filed Aug. 27, 1998, Appl. No. 463,934

Claims priority, application Germany, Sep. 13, 1997, 197 40 364

Int. Cl. G08B *21/00*

U.S. Cl. 340—604 **11 Claims**

1. An apparatus for operating a rain sensor for detecting a wetting of a window with moisture for wetting-dependent triggering of a windshield wiper system for motor vehicles, the apparatus comprising a transmitter which outputs a transmitter beam into a window at a first point; a receiver which detects a beam outcoupled from the window at a second point and as a function of a radiation intensity detected outputs a sensor signal; an amplifier device which receives said sensor signal and has a downstream evaluation assembly that triggers the system, with the beam having a transmitter beam component as a function of moisture on the window and/or an ambient beam component; first means which in a first interval for detecting the ambient beam component with said transmitter switched off detect the sensor signal amplified in said amplifier device and from this signal ascertain an interfering light signal corresponding to the ambient beam; a regulator to which the later signal is delivered and which drives a compensation means disposed in a current circuit of said receiver to regulate the interfering light signal to a desired value; and second means which in a second interval directly following the first interval, responsive to the transmitter beam component and the ambient beam with said transmitter switched on, to detect the amplified sensor signal which is influenced by said compensation means and from which the amplified sensor signal ascertains a useful light signal corresponding substantially to a beam of said transmitter.



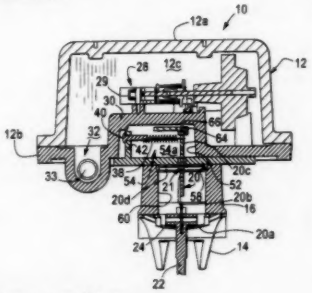
US 6,331,820 B1
EXPLOSION PROOF WATER FLOW DETECTOR

Zoltan Borbath, Elmhurst, and Scott E. Robillard, Aurora, both of Ill., assignors to Pittway Corporation, Chicago, Ill.

Provisional application No. 60/132,390, filed on May 4, 1999. This application Feb. 16, 2000, Appl. No. 505,438.

Int. Cl. G08B *21/00*

U.S. Cl. 340—606 **14 Claims**



1. A detector, comprising:

a structure for mounting to a flow conduit;

a switch housing mounted to said structure;

a switch having alternate opened and closed states, wherein said switch is contained within said switch housing;

a lever mechanism operatively connected to said switch and movable to change states of said switch, said lever mechanism having a switch activating portion extending through a wall of said switch housing and connected to said switch, said lever mechanism having a pivot part operatively connected to said switch activating portion which is pivotable upon detection of a condition within the flow conduit;

a spring operatively connected to said pivot part at one end of the spring and operatively connected to said structure at an opposite end of the spring to bias said pivot part into a base position and wherein said switch housing is substantially sealed to be explosion-proof, said spring located outside of said switch housing.

US 6,331,821 B1

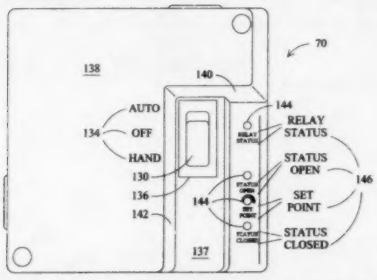
COMBINATION CURRENT SENSOR AND RELAY

Kent Holce, Lake Oswego; Frank Morey, Sherwood; Matt Rupert, Lake Oswego, and Mark Bowman, Mc Minville, all of Oreg., assignors to Veris Industries, Inc., Portland, Oreg.

Provisional application No. 60/145,616, filed on Jul. 26, 1999. This application Aug. 10, 2000, Appl. No. 636,296.

Int. Cl. G08B *21/00*

U.S. Cl. 340—635 **102 Claims**



1. A protection device for monitoring current in a power cable to an electrical device comprising:

(a) a transformer magnetically linked with said power cable connected to said electrical device, said transformer producing a voltage signal in response to the presence of a changing current within said power cable;

(b) a first switch circuit providing a signal to a remotely located controller in response to said sensing of said changing current;

(c) a second switch circuit sensing a signal from said remotely located controller and in response preventing said changing current from reaching said electrical device;

(d) a housing enclosing said transformer, said first switch, and said second switch;

(e) said housing including an upper surface defining a first, a second, and a third opening therein;

(f) a first light emitting device associated with said first opening that indicates at least one of whether said second switch circuit is at least providing one of an open circuit condition and an short circuit condition;

(g) a second light emitting device associated with said second opening that indicates at least one of whether said second switch circuit is at least providing one of said open circuit condition and said short circuit condition; and

(h) a third light emitting device associated with said third opening that indicates whether said second switch circuit is operational.

US 6,331,822 B1

COMMUNICATION CONTROL APPARATUS

Morio Sato, and Katsuhiro Ohuchi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1998, Appl. No. 108,306

Claims priority, application Japan, Jul. 1, 1997, 9-176224; Jun. 16, 1998, 10-168452

Int. Cl. G05B *23/02*

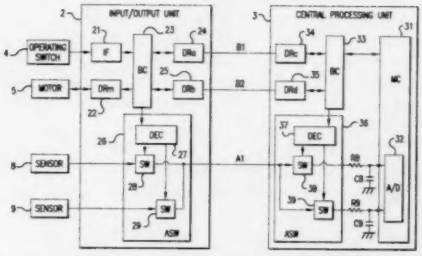
U.S. Cl. 340—825.07 **15 Claims**

1. A communication control apparatus comprising:

a central processing unit for processing load control based on inputted data;

an input/output unit for generating signals wherein an input side of said input/output unit is connected to a plurality of sensors and an output side of said input/output unit is connected to at least one load;

input/output lines for connecting said input/output unit and said central processing unit to each other for inputting data thereto,



said input/output lines include at least one digital data transmission line and an analog data transmission line;

an A/D conversion means operatively employed in said central processing unit for converting analog signals from said input/output unit to digital signals;

a bus controller employed in the input/output unit and a bus controller employed in the central processing unit operatively connected to each other by said at least one digital data transmission line, said bus controllers transmitting specific data indicating a sensor type of analog data through said at least one digital data transmission line when transmitting said analog data; and

a control means operatively connected to said central processing unit for storing received analog data by associating said analog data with a sensor type of said analog data, wherein said control means includes said A/D conversion means connected to said analog data transmission line; a register for storing digital data resulting from conversion by said A/D conversion means; and a processing means for processing digital data read out from said register, wherein said A/D conversion means is used for sequentially converting input analog signals coming from a plurality of ports one signal after another into digital data; and upon activation of one of said internal switches in accordance with a request issued by said central processing unit, said input/output unit transmits a signal for permitting said processing means to read out data from said register after a time it takes for a voltage of an input signal to sufficiently rise as an analog signal and a time it takes for said A/D conversion means to convert input analog signals from each of said ports into digital data have lapsed.

US 6,331,823 B1

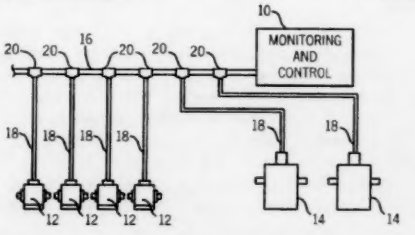
MONITORING SYSTEM FOR BEARINGS

Yehia El-Ibiary, Simpsonville, S.C., assignor to Reliance Electric Technologies, LLC, Mayfield Heights, Ohio

Filed Nov. 6, 1995, Appl. No. 554,182

Int. Cl. G08B *21/00*

U.S. Cl. 340—870.16 **24 Claims**



1. A system for monitoring a plurality of bearing units in operation in a single facility, said system comprising:

a plurality of bearing units to be monitored, each bearing unit thereof including a housing supporting a plurality of bearing

elements and multiple sensor devices each for detecting a respective different type of selected sensor information, at least one of said sensor devices being received within a bore formed in the housing, the sensor devices including at least two different sensors selected from a group including a shaft speed sensor, an accelerometer and a temperature sensor;

a plurality of local transmitters respectively associated with said plurality of bearing units, a respective local transmitter thereof being in electrical communication with said sensor devices of an associated bearing unit to receive said selected sensor information, said local transmitter including a local port having a predetermined connector configuration;

a central monitoring processor in selective electrical communication with each said respective local transmitter such that selected status information regarding said associated bearing unit will be supplied to said central monitoring processor at predetermined times; and

a bus line interconnecting said plurality of transmitters and said central monitoring processor to provide electrical communication of power and data signals therebetween, said bus line including a main trunk and a plurality of branch lines extending from said main trunk, a respective branch line being connected to one of said local transmitters by connection to said local port thereof.

US 6,331,824 B1

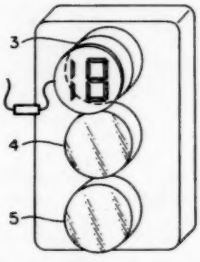
TRAFFIC CONTROL SIGNAL WITH DISPLAYED TIME-ELAPSE

Paul A. Firestone, 88 Central Park West, New York, N.Y. 10023

Filed Aug. 10, 2000, Appl. No. 635,623

Int. Cl. G08G *1/096*

U.S. Cl. 340—929 **6 Claims**



1. A traffic light for pedestrians' and vehicle operators' safety, comprising:

a traffic light device having a housing with lighted surfaces to convey directive and active signals for directing traffic flow;

a uniquely programmed device aligned with said housing and in or about each lighted surface to provide a "real-time" advisement of the time remaining in which the directive and active signal(s) is displayed;

wherein said "real-time" advisement comprises an icon in the form of one of graphical, numerical or other known advisory or signatory communication reveals the time remaining as part of the associated signal;

wherein one or more of the signals meant to relay a directive message comprises, as part of that signal, a mechanism for visual representation that advises the "real-time" that signal is to remain in the current state of advisement.

US 6,331,825 B1

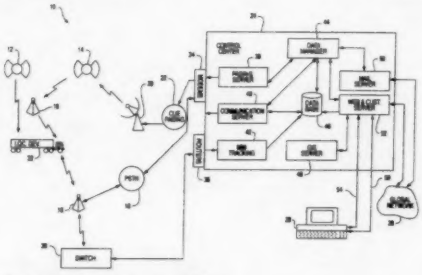
MOBILE LOCATOR SYSTEM

David L. Ladner, Minneapolis; Andrea J. Grazzini, Eagan, and Ronald E. Konezny, Minneapolis, all of Minn., assignors to Peoplenet, Inc., Chaska, Minn.

Continuation-in-part of application No. 08/783,292, filed on Jan. 10, 1997, now abandoned, which is a continuation of application No. 08/332,351, filed on Oct. 31, 1994, now Pat. No. 5,594,425, Provisional application No. 60/048,223, filed on May 30, 1997, Provisional application No. 60/052,879, filed on Jul. 17, 1997. This application Mar. 25, 1998, Appl. No. 47,608.

Int. Cl. G08G *1/123*

U.S. Cl. 340—988 **24 Claims**



1. A locator system, comprising:

a locator device including a locator unit for obtaining geographical location information identifying a location of the locator device;

a control center coupled to the locator device for bi-directional communication with the locator device;

a remote workstation coupled through a global computer network to the control center, the control center providing a computerized user interface to the workstation through the computer network; and

wherein the computerized user interface facilitates bi-directional communication between the locator device and the workstation;

a data base containing at least location history information associated with the locator device; and

a controller configured to combine the location history information with external database information to provide an indication of a number of people being in a vicinity of the locator device during a time period corresponding to the location history information.

US 6,331,826 B1

METHOD FOR PROVIDING AN IMPROVED RUN-LENGTH ENCODING ALGORITHM FOR DATA COMPRESSION

Marcus Wagner, Santa Monica, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 4, 2000, Appl. No. 477,289

Int. Cl. H03M *7/00*

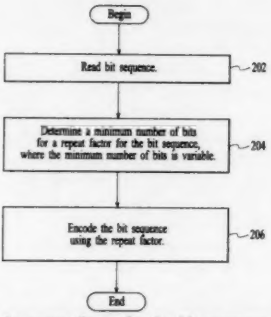
U.S. Cl. 341—59 **20 Claims**

1. A method for encoding a plurality of bit sequences, comprising:

(a) reading the plurality of bit sequences, wherein each bit sequence comprises a plurality of consecutive equal-valued bits of an input bit stream;

(b) determining a value of a repeat factor for each bit sequence, wherein the value of the repeat factor is a number of bits in the bit sequence;

(c) determining a value for a repeat factor encoding width for each bit sequence, wherein the value for the repeat factor encoding width is a minimum number of bits required for the


Begin
Read bit sequence.
202
Determine a minimum number of bits for a repeat factor for the bit sequence, where the minimum number of bits is variable.
204
Encode the bit sequence using the repeat factor.
206
End

value of the repeat factor for the bit sequence, wherein the minimum number of bits varies among the plurality of bit sequences; and

(d) encoding each of the plurality of bit sequences using its repeat factor encoding width and repeat factor.

US 6,331,827 B1

HUFFMAN DECODER USING TWO PRIORITY ENCODER TO REDUCE CIRCUIT SCALE

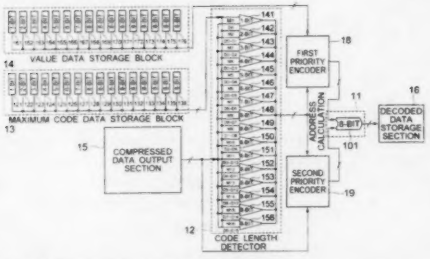
Tsuneki Sasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 21, 2000, Appl. No. 598,253

Claims priority, application Japan, Jun. 29, 1999, 11-183286

Int. Cl. H03M *7/40*

U.S. Cl. 341—65 **3 Claims**



1. A Huffman-code decoder comprising:

a coded data memory for storing coded data for possible Huffman codes, the coded data having addresses defined by sequential numbers of said Huffman codes, a number of said possible Huffman codes being equal to or less than 2_N, said possible Huffman codes having M bits at most;

a maximum code data storage section including a plurality of memory cells each for storing a maximum code data;

a value data storage section including a plurality of memories each for storing value data corresponding to minimum code among Huffman codes having a corresponding number of bits;

a code length detector for detecting a code length of an input Huffman code by comparing the input Huffman code against the maximum code data;

a first selection section for selecting, based on the code length detected by said code length detector, all bits of the input Huffman codes having (N−1) bits or less, and (n-N+1)th bit to n-th bit of the input Huffman code having N bits or more, "n" being a natural number assuming N to M;

a second selection section for selecting one of maximum code data, stored in said maximum code data storage section, based on the code length detected by said code length detector; and

an address calculator for calculating an address based on the selected bits of the input Huffman code and the selected value data to specify the coded data in said coded data storage section based on the calculated address,

each said value data corresponding to a remainder obtained by subtracting the address of a minimum code among Huffman codes having a corresponding number of bits in said coded data storage section from minimum code data, said minimum code data corresponding to the minimum code among Huffman codes having (N−1) bits or less and corresponding to (n-N+1)th bit to n-th bit of a minimum code among Huffman codes having N bits or more.

US 6,331,828 B1

SIGNAL CONVERSION METHOD AND SIGNAL CONVERTERS

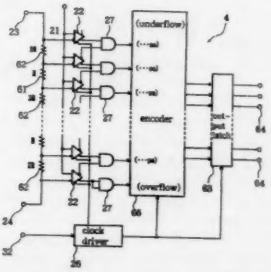
Hiroyuki Kawasaki, Hamamatsu, Japan, assignor to Kokochi Sangyo Co., Ltd., Hamamatsu, Japan

Filed Aug. 19, 1999, Appl. No. 377,314

Claims priority, application Japan, Aug. 20, 1998, 10-234739

Int. Cl. H03M *7/02*

U.S. Cl. 341—83 **8 Claims**



1. A signal conversion method using three digit symmetric binary numbers (HEN2) as digital data signals, the three digit symmetric binary numbers (HEN2) defined by three digits {n, o, p} each expressing a value {−1, 0, 1} as a one-digit signal, and wherein the digit "o" represents zero, the digital data signals comprising a combination of signals in which at least one of two adjacent digits at any digit position of one or more digits of 2-based three digit redundant binary numbers is the digit "o", the method including:

dividing analog signals into individual sections corresponding to the digital data signals of the three digit symmetric binary numbers (HEN2); and

converting at least one of the digital data signals and analog signals into the other of the digital data signals and the analog signals or mutual converting between the digital data signals and the analog signals.

US 6,331,829 B2

DECODING DEVICE AND METHOD

Takahiro Kawai, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1999, Appl. No. 436,250

Claims priority, application Japan, Jul. 2, 1999, 11-189103

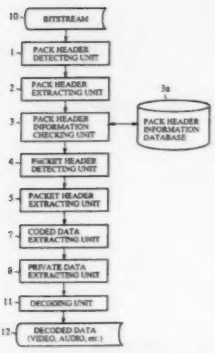
Int. Cl. H03M *13/00*

U.S. Cl. 341—94 **11 Claims**

1. A decoding device for extracting coded data from a sequence of data that forms a hierarchy in which each of a plurality of packs includes at least a packet and each packet includes coded data located within a coded data region thereof, said device comprising:

pack header detecting means for detecting a pack header placed at the head of each of the plurality of packs;

pack header information extracting means for extracting pack header information contained in the pack header detected by said pack header detecting means;



a pack header information database for storing at least a piece of reference pack header information that conforms to a specific standard;

packet header detecting means for detecting a packet header placed at the head of each packet contained in each of the plurality of packs based on the pack header information extracted by said pack header information extracting means;

means for checking whether an error occurs in the pack header information extracted by said pack header information extracting means, for retrieving a piece of reference pack header information that mostly conforms to the specific standard from said pack header information database if the extracted pack header information has an error, and for replacing the extracted pack header information having an error with the reference pack header information that mostly conforms to the specific standard to enable said packet header detecting means to detect the packet header;

packet header information extracting means for extracting packet header information contained in the packet header;

coded data extracting means for separating a coded data region from each packet based on the packet header information extracted by said packet header information extracting means, and for extracting coded data from the coded data region; and

decoding means for decoding the coded data extracted by said coded data extracting means.

US 6,331,830 B1

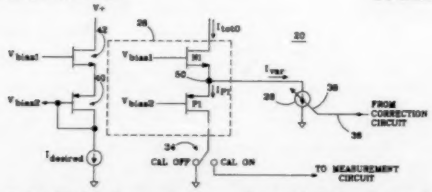
SELF-TRIMMING CURRENT SOURCE AND METHOD FOR SWITCHED CURRENT SOURCE DAC

Bang-Sup Song, LaJolla, Calif., and Alex R. Bugeja, Dallas, Tex., assignors to Rockwell Technologies LLC, Thousand Oaks, Calif.

Provisional application No. 60/180,434, filed on Feb. 4, 2000. This application Aug. 3, 2000, Appl. No. 631,596.

Int. Cl. H03M *1/10*

U.S. Cl. 341—121 **34 Claims**



1. A self-trimming current source for a switched current source digital-to-analog converter (DAC), comprising:

a fixed current source, comprising:

a first field-effect transistor (FET) having its gate connected to a first bias voltage, its source connected to a first junction, and its drain providing the output of said self-trimming current source, said first FET saturated by said first bias voltage such that a known voltage is established at said first junction,

a second FET complementary to said first FET, having its gate connected to a second bias voltage and its source connected to said first junction such that said known voltage establishes said second FET's gate-source voltage and thereby a first output current at said output, the drain terminals of said first and second FETs each providing a high impedance to the respective circuits to which they are connected,

a variable current source connected to provide a current to said first junction and thereby a second output current at said output in response to a control signal received at an input, the total output current of said self-trimming current source being the sum of said first and second output currents,

a first switch responsive to a calibrate signal which connects the drain of said second FET to a measurement circuit when said calibrate signal is in a first state and to a circuit common point when said calibrate signal is in a second state,

a measurement circuit which produces an output representative of the magnitude of said total output current when said calibrate signal is in said first state, and

a correction circuit which receives said current measurement circuit output at an input and provides said control signal to said variable current source at an output, said correction circuit arranged to vary said control signal such that said total output current is made equal to a predetermined value within a predetermined tolerance,

said self-trimming current source being one of a plurality of current sources making up a switched current source DAC.

US 6,331,831 B1

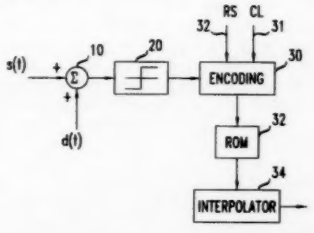
A/D CONVERSION THROUGH DITHERING

Zoran Cvetkovic, Summit, and Ingrid Daubechies, Princeton, both of N.J., assignors to AT&T Corp., New York, N.Y.

Provisional application No. 60/165,268, filed on Nov. 12, 1999. This application Oct. 7, 2000, Appl. No. 684,181.

Int. Cl. H03M *1/20*

U.S. Cl. 341—131 **18 Claims**



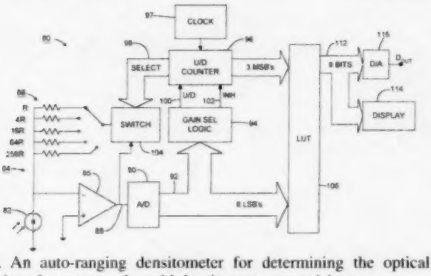
1. Apparatus for converting an input signal to digital form, where the input signal corresponds to an information signal that is bandlimited to frequency B, an amplitude range of ±C, comprising:

a dither signal that has a zero crossing within each interval T, where $T=\pi/\lambda B$, λ is a constant that is greater than 1 and spans in amplitude a range that is greater than the amplitude range of said input signal;

a circuit that determines zero crossings of a signal that combines said input signal and said dither signal; and

an encoder, responsive to said circuit, that encodes position of a zero crossing within each of said intervals.

US 6,331,832 B1
AUTO-RANGING DIGITAL DENSITOMETER WITH LOOKUP TABLE
Allen J. Rushing, 429 Tara La., Webster, N.Y. 14580
Filed Apr. 3, 2000, Appl. No. 541,923
Int. Cl. H03M *1/18;* **H01J** *40/14*
U.S. Cl. 341—139 **22 Claims**



2. An auto-ranging densitometer for determining the optical density of a test sample, said densitometer comprising:

a photodetector;

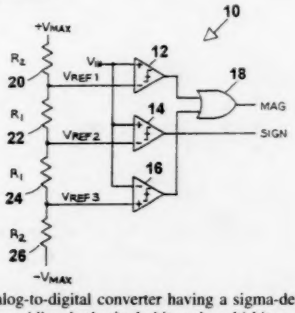
an amplifier circuit adapted to produce an output signal proportional to light flux incident on said photodetector, said amplifier circuit having multiple gains that increase one to the next by ratios between 2.3:1 to 5.7:1;

an analog-to-digital converter adapted to convert said output signal of said amplifier circuit to digital format; and

gain select logic outputting a gain code used to select the gain of said amplifier circuit;

whereby said analog-to-digital converter output in combination with said gain code is characteristic of the optical density of said test sample.

US 6,331,833 B1
HIGHLY LINEAR SIGMA-DELTA MODULATOR HAVING GRACEFUL DEGRADATION OF SIGNAL-TO-NOISE RATIO IN OVERLOAD CONDITION
Eric H. Naviasky, Ellicott City; Michael M. Hufford, Catonsville, and Jeremy Lubkin, Baltimore, all of Md., assignors to Cadence Design Systems, Inc., San Jose, Calif.
Provisional application No. 60/133,175, filed on May 7, 1999. This application Jan. 20, 2000, Appl. No. 488,660.
Int. Cl. H03M *1/06;3/00*
U.S. Cl. 341—143 **20 Claims**

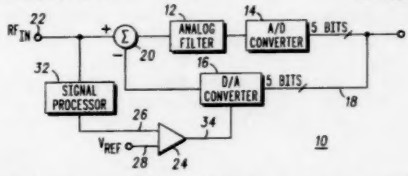


1. An analog-to-digital converter having a sigma-delta configuration and providing both single-bit and multi-bit operation, the converter comprising:

a plurality of single-bit comparators, each connected to receive an input analog signal Vin and a respective one of a plurality of reference signals, the value of each reference signal comprising a predetermined percentage of an anticipated maximum absolute value of Vin, at least one of said single-bit comparators providing a first digital output indicating whether Vin is above or below zero; and

logic combining at least two of the outputs of the plurality of single-bit comparators and providing a second digital output signal indicating whether Vin is within a normal range or above the predetermined percentage of the anticipated maximum absolute value of Vin.

US 6,331,834 B1
WIDEBAND DATA CONVERTER WITH ADAPTIVE SEGMENT SHUFFLING
Paul F. Smith, N. Richland Hills, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 28, 2000, Appl. No. 675,039
Int. Cl. H03M *1/12*
U.S. Cl. 341—155 **20 Claims**



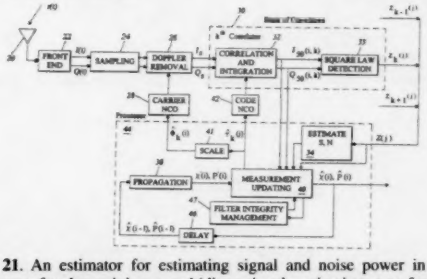
1. A signal converter for a wideband communications device, comprising:

an analog to digital converter for converting an input analog signal into digital signal segments;

a segment shuffler for shuffling the digital signal segments output by the analog to digital converter to improve linearity of the digital signal segments; and

a shuffle controller connected to the segment shuffler for adaptively turning the shuffler on and off based on at least one parameter of the input analog signal.

US 6,331,835 B1
DEEPLY-INTEGRATED ADAPTIVE GPS-BASED NAVIGATOR WITH EXTENDED-RANGE CODE TRACKING
Donald E. Gustafson, Waltham; John R. Dowdle, Arlington, and John M. Elwell, Jr., Sudbury, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.
Provisional application No. 60/118,291, filed on Feb. 2, 1999. This application Nov. 9, 1999, Appl. No. 437,087.
Int. Cl. H04B *7/185*
U.S. Cl. 342—357.06 **101 Claims**



21. An estimator for estimating signal and noise power in a system for determining a multidimensional navigation state for a navigation platform based on radio navigation data embedded in noise, said radio navigation data signal being received by a radio navigation data receiver including a bank of correlators for extracting said radio navigation data from said noise over a range of delay error, said correlators processing said radio navigation data and said noise to generate correlator output functions indicative of degree of correlation for each correlator between said radio navigation data and a known replica signal, said estimator comprising:

a signal power estimator for determining radio navigation data signal power based on correlator moments;

a noise power estimator for estimating noise power based on the correlator moments and said signal power estimate; and

a nonlinear filter for calculating said correlator moments, which represent statistical expectations of nonlinear functions of line-of-sight position errors.

US 6,331,836 B1

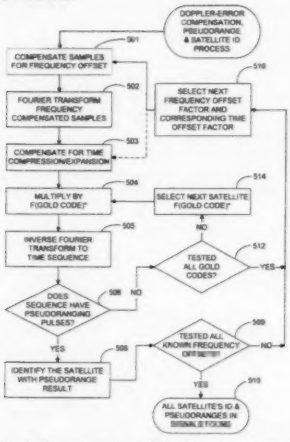
METHOD AND APPARATUS FOR RAPIDLY ESTIMATING THE DOPPLER-ERROR AND OTHER RECEIVER FREQUENCY ERRORS OF GLOBAL POSITIONING SYSTEM SATELLITE SIGNALS WEAKENED BY OBSTRUCTIONS IN THE SIGNAL PATH

Louis H. M. Jandrell, Plano, Tex., assignor to Fast Location-.Net, LLC, Dallas, Tex.

Filed Aug. 24, 2000, Appl. No. 645,152

Int. Cl. G01S *5/02*

U.S. Cl. 342—357.12 **39 Claims**



1. A method for extracting Döppler-error components from digitized signal samples transmitted by a satellite, said method comprising the steps of:

receiving and digitizing said signals to produce digitized samples;

squaring said digitized signal samples to produce squared samples;

decimating said squared samples;

auto-correlating said squared samples to produce an auto-correlate; and

transforming said auto-correlate to the frequency domain.

US 6,331,837 B1

SPATIAL INTERFEROMETRY MULTIPLEXING IN WIRELESS COMMUNICATIONS

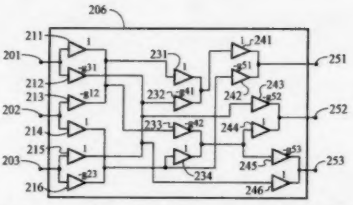
Steve J. Shattil, Boulder, Colo., assignor to GenghisComm LLC, Boulder, Colo.

Continuation-in-part of application No. 08/862,859, filed on May 23, 1997, now Pat. No. 6,008,760. This application Jun. 1, 1999, Appl. No. 324,206.

Int. Cl. G01S *3/16*

U.S. Cl. 342—378 **35 Claims**

1. A method for separating a plurality of received interfering signals comprising:



measuring a plurality of interference ratios of a plurality of the received signals,

generating a plurality of weights based on the plurality of measured interference ratios of the received signals, and

weighting and combining the plurality of received signals using the plurality of weights to enhance a signal-to-interference ratio for at least one of the received signals by canceling at least one interfering signal.

US 6,331,838 B1

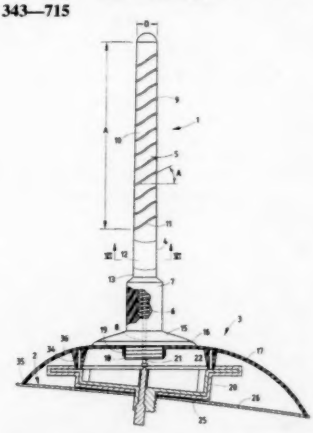
FLEXIBLE VEHICLE ANTENNA

Stephen Daniel Scott, Fenton, and Daniel Gordon Morris, Ovid, both of Mich., assignors to Delphi Technologies, Inc., Troy, Mich.

Filed Jul. 19, 2000, Appl. No. 619,244

Int. Cl. H01Q *1/32*

U.S. Cl. 343—715 **22 Claims**



1. An antenna adapted to be mounted to a mobile vehicle for receiving digital signals from a satellite, comprising:

a base configured to be secured to a vehicle;

an elongated mast constructed of a polymer material and including at least one antenna-forming conductor extending along said mast to receive signals;

a spring member flexibly connecting said elongated mast to said base;

an elastomeric cover extending between said base and said elongated mast and enveloping said spring member; and

a flexible conductor connected to said antenna-forming conductor and extending through said elastomeric cover.

US 6,331,839 B1

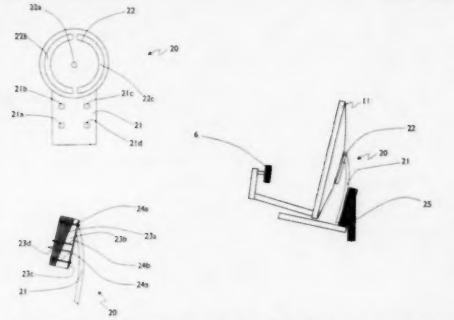
SATELLITE ANTENNA ENHANCER AND METHOD AND SYSTEM FOR USING AN EXISTING SATELLITE DISH FOR AIMING REPLACEMENT DISH

Burt Baskette Grenell, 901 S. 19th St., Arlington, Va. 22202

Continuation-in-part of application No. 09/482,650, filed on Jan. 13, 2000, now Pat. No. 6,215,453, Provisional application No. 60/124,856, filed on Mar. 17, 1999, Provisional application No. 60/132,422, filed on May 4, 1999. This application Mar. 1, 2000, Appl. No. 517,122.

Int. Cl. H01Q *3/20*

U.S. Cl. 343—840 **23 Claims**



1. A satellite dish mounting device for mounting an enhancement dish reflector to an existing satellite dish without re-aiming the enhanced satellite dish reflector, wherein the existing satellite dish has an existing reflector, a feed horn, a mounting bracket, and a feed horn support arm, and wherein the enhancement dish reflector has a first axis and a second axis, wherein the first axis has a greater length than the second axis, and wherein the enhancement dish reflector has an angle of orientation of the first axis, the satellite dish mounting device comprising:

an adjustment device for adjusting the angle of orientation of the enhancement dish reflector; and

an attachment mechanism connected to the adjustment device, the attachment mechanism for attaching the satellite dish mounting device to one from a group of the existing reflector, the mounting bracket, and the feed horn support arm;

wherein the enhancement dish reflector is attached via the satellite dish mounting device to the existing satellite dish; and

wherein the enhancement dish reflector is adjustably oriented via the satellite dish mounting device so as to acquire an enhanced satellite signal.

US 6,331,840 B1

OBJECT-DRAG CONTINUITY BETWEEN DISCONTINUOUS TOUCH SCREENS OF A SINGLE VIRTUAL DESKTOP

Kevin W. Nielson, 4007-5th St S.W., Calgary, AB, Canada, T2S 2C9, and Husam Kinawi, #903, 2010 Ulster Rd. N.W., Calgary, AB, Canada, T2N 4C2

Filed Mar. 26, 1999, Appl. No. 277,204

Claims priority, application Canada, Mar. 27, 1998, 2233497

Int. Cl. G09G *3/02*

U.S. Cl. 345—1.1 **14 Claims**

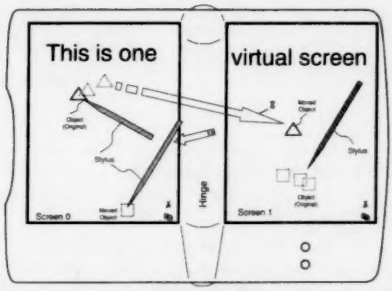
1. A process for dragging a displayed first object between discontinuous source and target touch-screens of the single virtual desktop of a computer, the first object being known in the virtual desktop by unique parameters, the process comprising:

contacting a pointing implement to the source touch-screen to select the first object;

storing the selected first object's parameters in a buffer in the computer;

moving the pointing implement to the target touch-screen;

contacting the pointing implement to the target touch-screen where the first object is to be dragged to;



releasing the selected first object's parameters from the buffer so that the first object is pasted to the target touch-screen.

US 6,331,841 B1

IMAGE DISPLAY SYSTEM

Yuki Tokuhashi, and Naoto Shimada, both of Hachioji, Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

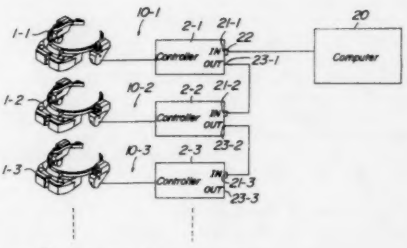
Continuation of application No. 08/529,462, filed on Sep. 18, 1995, now Pat. No. 6,137,457. This application May 25, 2000, Appl. No. 580,446.

Claims priority, application Japan, Sep. 19, 1994, 6-223247

This patent is subject to a terminal disclaimer.

Int. Cl. G09G *5/00*

U.S. Cl. 345—8 **6 Claims**



1. An image display system comprising:

(a) a plurality of image display units, each respective display unit including a respective individual controller for outputting a plurality of image signals, and at least one display means for enabling a switching operation with a predetermined operation mode of a plurality of operation modes including a mode for indicating the plurality of image signals output from said respective individual controller;

(b) an external control device for outputting mode control signals which address the operation mode of the display means, the individual controller of each of the respective image display units including an external control terminal for receiving the mode control signals and an output terminal for outputting the mode control signals supplied to the external control terminal, and the output terminals of each respective individual controller being connected to the external control terminal of another one of said individual controllers in turn so as to couple said individual controllers to the external control device in series, a particular one of said individual controllers in said series having its external control terminal connected to the external control device, and the operation modes of all of said display means being collectively and forcibly controlled through said individual controllers on the basis of the mode control signals from the external control device; and

(c) a detection means for detecting a coupling condition of the external control terminals of each of said individual controllers to the external control device, said individual controllers

controlling the operation modes of the respective display means corresponding thereto collectively and forcibly by the mode control signals from the external control device, on the basis of the output of the detection means.

US 6,331,842 B1

METHOD FOR DRIVING A PLASMA DISPLAY PANEL

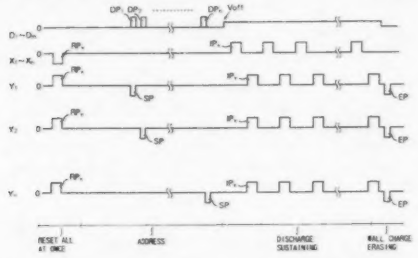
Mitsunori Nozu; Kimio Amemiya, and Tsutomu Tokunaga, all of Yamanashi-ken, Japan, assignors to Poineer Electric Corporation, Tokyo, Japan

Filed Mar. 30, 1998, Appl. No. 50,026

Claims priority, application Japan, Apr. 2, 1997, 9-099752

Int. Cl. G09G *3/28*

U.S. Cl. 345—60 **4 Claims**



1. A method for driving a plasma display panel having a plurality of first and second sustain electrodes, a plurality of address electrodes which intersect with the sustain electrodes to form a pixel at every intersection, an address period in which data pulses are applied to the address electrodes, and scanning pulses are applied to the second sustain electrodes, thereby selecting lighted pixels and unlighted pixels, and a discharge sustaining period in which discharge sustaining pulses are alternately applied to the first and second sustain electrodes so as to sustain the lighted and unlighted pixels, comprising:

applying an offset voltage having the same polarity as the data pulse to the address electrodes in the discharge sustaining periods;

wherein the offset voltage is applied to the address electrodes independently of the data pulses.

US 6,331,843 B1

DISPLAY APPARATUS CAPABLE OF ADJUSTING THE NUMBER OF SUBFRAMES TO BRIGHTNESS

Mitsuhiro Kasahara, Hirakata; Yuichi Ishikawa, Ibaraki, and Tomoko Morita, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP98/05510, § 371 Date Aug. 5, 1999, § 102(e) Date Aug. 5, 1999, PCT Pub. No. WO99/30309, PCT Pub. Date Jun. 17, 1999

PCT Filed Dec. 7, 1998, Appl. No. 355,341

Claims priority, application Japan, Dec. 10, 1997, 9-340418; Sep. 25, 1998, 10-271030

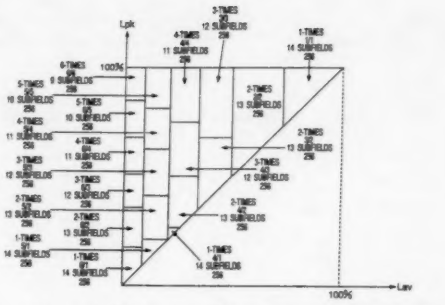
Int. Cl. G09G *3/28*

U.S. Cl. 345—63 **8 Claims**

1. A display apparatus for creating, for each image, a number of subfields Z from a first subfield to the Zth subfield in accordance with a Z bit representation of each pixel, a weight of each subfield, and a number of gradation display points, the display apparatus comprising:

an average level detector that detects an average image brightness level;

an image characteristic determining device that determines a subfield number Z and a weighing multiple, while maintaining a same number of gradation display points, based on the average image brightness level; and



a weight setting device that multiplies the weight of each subfield by the weighing multiple;

wherein the image characteristic determining device decreases the subfield number Z and increased the weighing multiple as the average image brightness level decreases.

US 6,331,844 B1

LIQUID CRYSTAL DISPLAY APPARATUS

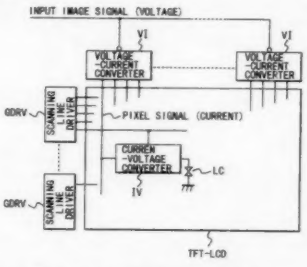
Haruhiko Okumura, Fujisawa; Akira Kinno; Hisao Fujiwara, both of Yokohama; Goh Itoh, Tokyo, and Norihiko Kamiura, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 4, 1997, Appl. No. 868,733

Claims priority, application Japan, Jun. 11, 1996, 8-149182

Int. Cl. G09G *3/38*

U.S. Cl. 345—87 **10 Claims**



1. A liquid crystal display apparatus comprising:

a substrate;

a plurality of scanning lines extending substantially in parallel with each other in a row direction on said substrate;

a plurality of signal lines extending substantially in parallel with each other in a column direction on said substrate;

a signal line driver for supplying a current signal as a pixel signal to each of said plurality of signal lines;

a scanning line driver for selectively supplying a scanning signal to said plurality of scanning lines; and

a plurality of pixels arranged on said substrate at intersections of said plurality of scanning lines and said plurality of signal lines, each of said plurality of pixels including conversion circuit for receiving the current signal, which is supplied to said signal lines, and converting the current signal into a voltage signal, and a liquid crystal cell to which the converted voltage signal is applied.

US 6,331,845 B1

LIQUID CRYSTAL DISPLAY DEVICE AND DRIVING METHOD THEREFOR

Masaaki Kitajima, Hitachiota; Makoto Tsumura, Hitachi; Yoshiro Mikami, Hitachi; Katsuyuki Funahata, Hitachi; Yoshiharu Nagae, Hitachi; Yoko Wakui, Ibaraki-ken; Ryuichi Saito, Hitachi; Makoto Matsui, Kunitachi, and Fumiaki Nemoto, Hitachi, all of Japan, assignors to Hitachi, LTD, Tokyo, and Hitachi Haramachi Semi-conductor, LTD, Hitachi, both of Japan

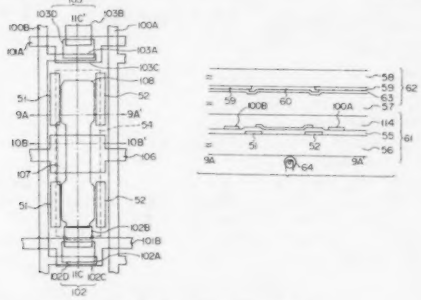
Continuation of application No. 08/681,353, filed on Jul. 23, 1996, and a continuation of application No. 07/741,752, filed on Aug. 7, 1991, now Pat. No. 5,561,440. This application Sep. 14, 1999, Appl. No. 395,200.

Claims priority, application Japan, Aug. 8, 1990, 2-208107

This patent is subject to a terminal disclaimer.

Int. Cl. G09G *3/36;* **G02F** *1/1335*

U.S. Cl. 345—88 **14 Claims**



1. A liquid crystal display device comprising:

a first substrate including a thin film transistor, a plurality of scan lines, a plurality of signal lines, and pixel electrodes connected to said thin film transistor,

a second substrate including a transparent common electrode,

a liquid crystal that is sealed between said first and second substrates,

wherein said first substrate including a first opaque body extending along said signal lines and formed under a peripheral portion of said pixel electrodes,

said second substrate including a second opaque body having opening portion arranged in a matrix manner,

a projection of said second opaque body onto said first substrate is overlapped with said pixel electrodes,

said first opaque body formed in the same process as a terminal portion formed for pulling said scan line.

US 6,331,846 B1

DIFFERENTIAL AMPLIFIER, OPERATIONAL AMPLIFIER EMPLOYING THE SAME, AND LIQUID CRYSTAL DRIVING CIRCUIT INCORPORATING THE OPERATIONAL AMPLIFIER

Tomoaki Nakao, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 14, 1999, Appl. No. 291,282

Claims priority, application Japan, Apr. 17, 1998, 10-108273

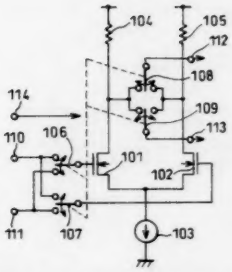
Int. Cl. G09G *3/36*

U.S. Cl. 345—96 **33 Claims**

1. A differential amplifier for amplifying two kinds of input signals including a common mode input signal and a differential mode input signal, comprising:

first and second amplifiers for amplifying said two kinds of input signals; and

control means for selectively switching said two kinds of input signals to be inputted to said first and second amplifiers, said control means also outputting the common mode input signal amplified by one of said first and second amplifiers as a differential mode output signal and the differential mode input signal amplified by the other amplifier as a common mode output signal.



US 6,331,847 B1

THIN-FILM TRANSISTOR LIQUID CRYSTAL DISPLAY DEVICES THAT GENERATE GRAY LEVEL VOLTAGES HAVING REDUCED OFFSET MARGINS

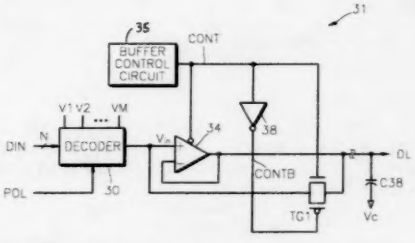
Chang-oon Kim, Kyungki-do, and Kyune-hee Lee, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Apr. 12, 1999, Appl. No. 290,375

Claims priority, application Rep. of Korea, Apr. 13, 1998, 98-13127

Int. Cl. G09G *3/36*

U.S. Cl. 345—100 **5 Claims**



1. A display device, comprising:

an array of display cells;

a data line electrically coupled to at least one display cell in said array thereof;

a decoder that outputs a first data line signal having a magnitude equal to a first gray level voltage during a first selection time interval, in response to a data input signal;

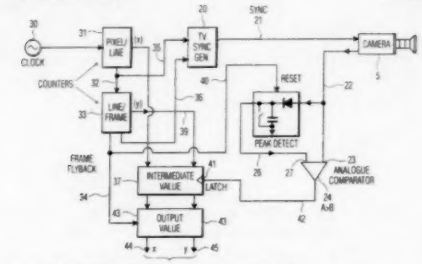
a data line driver circuit that drives said data line with buffered and unbuffered versions of the first data line signal during first and second consecutive portions of the first selection time interval, respectively, said data line driver circuit comprising:

a follower amplifier having an input electrically coupled to an output of said decoder and an output electrically coupled to said data line; and

a transmission gate having an input electrically coupled to the output of said decoder and an output electrically coupled to said data line; and

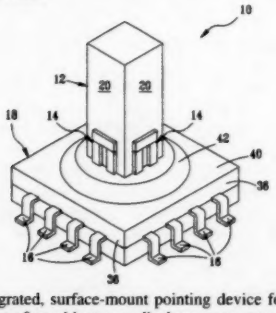
a buffer control circuit that is electrically coupled to said follower amplifier and said transmission gate and generates a control signal having a first state that enables said follower amplifier and disables said transmission gate during the first portion of the selection time interval and a second state that disables said follower amplifier and enables said transmission gate during the second portion of the selection time interval.

US 6,331,848 B1
PROJECTION DISPLAY SYSTEM
Andrew G. Stove, Reigate, United Kingdom; Ruediger Grewer, Schenefeld, Germany; Ingwer Carlsen, Kiel, Germany; Heino Svensson, Hamburg, Germany; Karl-Juergan Moennich, Wedel, Germany; Joachim Schmidt, and Thomas Wendler, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 24, 1997, Appl. No. 842,524
Claims priority, application United Kingdom, Apr. 27, 1996, 9608770
Int. Cl. G09G 5/00
U.S. Cl. 345—156 7 Claims



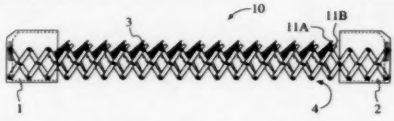
1. A projection display system, comprising:
a projector arranged to project a computer generated image onto a screen,
a hand-held pointer capable of producing a beam of visible radiation,
a video arranged to view the screen and produce a video signal, and
means for analyzing the video signal produced by the camera to determine a point on the screen radiated by the pointer,
wherein the pointer has a button for producing a computer input signal that is communicated via a wireless infra red link between the pointer and a computer.

US 6,331,849 B1
INTEGRATED SURFACE-MOUNT POINTING DEVICE
Robert M. VandenBoom, Markle, Ind., assignor to CTS Corporation, Elkhart, Ind.
Filed Feb. 25, 1999, Appl. No. 258,513
Int. Cl. G01L 1/22
U.S. Cl. 345—161 20 Claims



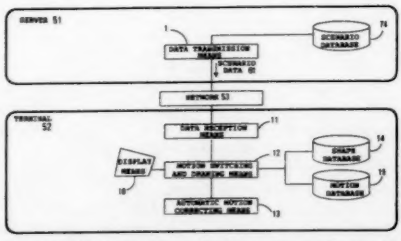
1. An integrated, surface-mount pointing device for controlling the movement of an object on a display screen, comprising;
a) a base member;
b) a shaft having a first end and a second end, with the first end mounted in the base member;
c) a first sensor mounted on the shaft for sensing the amount of strain in the shaft that is created in response to an applied force on the shaft in at least a first direction; and,
d) a first pair of spaced electrical leads embedded in the base member and extending at least partially therethrough, each electrical lead having an inner terminal end electrically connected to the first sensor, and an outer terminal end extending outwardly of the base member and being shaped for mounting on the surface of a circuit board.

US 6,331,850 B1
COLLAPSIBLE KEYBOARD
Robert Olodort, Santa Monica, and John Tang, San Carlos, both of Calif., assignors to Think Outside, Inc., Carlsbad, Calif.
Provisional application No. 60/065,181, filed on Nov. 12, 1997.
This application Nov. 12, 1998, Appl. No. 190,947.
Int. Cl. B41J 5/16
U.S. Cl. 345—168 5 Claims



1. A collapsible assembly of keys for entering data, said collapsible assembly comprising:
a support element extendible to a first footprint and contractible to a second footprint;
a plurality of keys couple to said support element, each of said keys having a key base, wherein each said key base rotates as said support element is extending; and
a flexible conductor disposed on at least one of said key base.

US 6,331,851 B1
GRAPHIC DISPLAY APPARATUS, SYNCHRONOUS REPRODUCTION METHOD, AND AV SYNCHRONOUS REPRODUCTION APPARATUS
Seiichi Suzuki, Katano; Yutaka Shirai, Izumiotsu; Masashi Tokunaga, Higashiosaka; Haruyo Ohkubo, Moriguchi; Kenjirou Tsuda, Hirakata, and Tetsuya Imamura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
PCT No. PCT/JP09/02175, § 371 Date Oct. 8, 1998, § 102(e) Date Oct. 8, 1998, PCT Pub. No. WO98/53443, PCT Pub. Date Nov. 26, 1998
PCT Filed May 15, 1998, Appl. No. 142,813
Int. Cl. G06F 15/00
U.S. Cl. 345—419 18 Claims



1. A graphic display apparatus having a server and a terminal on a network to provide graphic displays at the terminal,
said server comprising:
a character data database defining the shapes of three-dimensional characters;
a motion database defining said characters' motions; and
scenario data specifying said character data and a time-series combination with one or more of said motions;
said terminal comprising:
a character database in which said character data is stored;
a motion database in which said motions are stored;

a data retrieving means for determining whether any character data specified by said scenario data is present in said character database; and

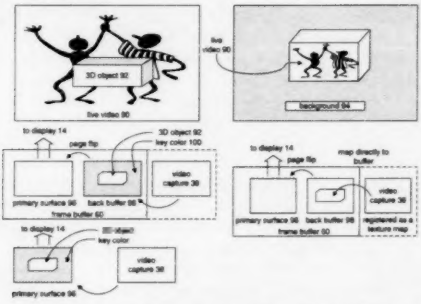
a data request means for requesting said server for character data that is not present in said character database.

US 6,331,852 B1

METHOD AND APPARATUS FOR PROVIDING A THREE DIMENSIONAL OBJECT ON LIVE VIDEO

David Allen Gould, Reading, and Mark E. Vrabel, Southbridge, both of Mass., assignors to ATI International SRL, Christ Church, Barbados

Filed Jan. 8, 1999, Appl. No. 227,635
Int. Cl. G06T *15/00*
U.S. Cl. 345—419 **21 Claims**



1. A method for providing a three dimensional object on live video, the method comprises the steps of:

a) filing at least a portion of a back buffer with a key color, wherein the key color indicates presentation of the live video;

b) writing the three dimensional object into the back buffer; and

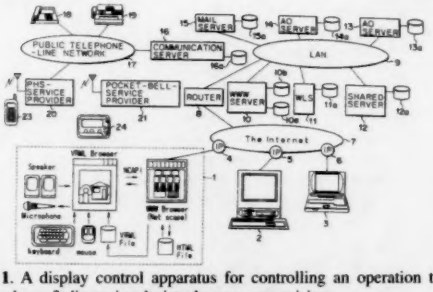
c) flipping the back buffer to become a primary surface such that the three dimensional object is presented in a foreground viewing perspective with respect to the live video.

US 6,331,853 B1

DISPLAY CONTROL APPARATUS DISPLAY CONTROL METHOD AND PRESENTATION MEDIUM

Ken Miyashita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 24, 1998, Appl. No. 199,243
Claims priority, application Japan, Nov. 28, 1997, 9-327835
Int. Cl. G06F *15/00*
U.S. Cl. 345—427 **12 Claims**



1. A display control apparatus for controlling an operation to display a 3-dimensional virtual space, comprising:

presentation means for presenting a picture of a 3-dimensional virtual space photographed by using a hypothetical photographing means used for photographing a 3-dimensional virtual space;

mode switching means for switching from a first-person mode in which a visual point of view of the self representing object representing the user in a 3-dimensional virtual space coincides with the position of said A photographing means to a third-person mode with said visual point of view of said self representing object not coinciding with said position of said photographing means and vice-versa; and

control means or controlling said position of said photographing means in accordance with said visual point of view of said self representing object in said third person mode,

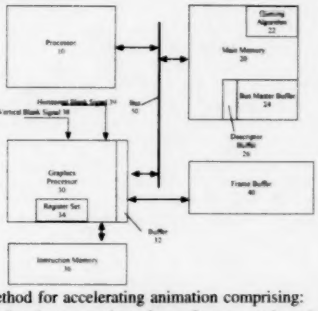
wherein said control means controls said photographing means in said third person mode with said visual point of view of said self representing object not coinciding with said position of said photographing means in an auto mode such that said photographing means automatically changes values of a position and orientation to follow said self-representing object when said self representing object moves dynamically in said 3-dimensional virtual space.

US 6,331,854 B1

METHOD AND APPARATUS FOR ACCELERATING ANIMATION IN A VIDEO GRAPHICS SYSTEM

Philip J. Rogers, Pepperell, and Xiaoqing Wu, Dracut, both of Mass., assignors to Azi International SRL, Christ Church, Barbados

Filed Oct. 5, 1998, Appl. No. 166,033
Int. Cl. G06T *15/70*
U.S. Cl. 345—473 **17 Claims**



1. A method for accelerating animation comprising:

storing drawing operations for a first scene in a bus master buffer, wherein the first scene is to be drawn to a first frame;

storing a frame flip operation in the bus master buffer at a location subsequent to the drawing operations for the first scene such that when accessed by a graphics processor, the frame flip operation will be performed subsequent to the drawing operations for the first scene by swapping a second frame for the first frame;

performing drawing calculations for a second scene, wherein the second scene is to be drawn in the second frame;

storing drawing operations for the second scene in the bus master buffer at a location subsequent to the frame flip operation; and

signaling the graphics processor that data is present in the bus master buffer wherein, in response to the signaling, the graphics processor performs the steps of:

fetching the drawing operations for the first frame, the frame flip operation, and the drawing operations for the second frame from the bus master buffer;

executing the drawing operations for the first frame by displaying the first frame; and

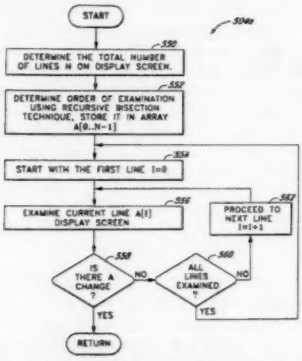
executing the frame flip operation by swapping the first frame and the second frame such that the second frame drawing operations are executed and the first frame drawing operations can be updated.

US 6,331,855 B1

METHOD AND APPARATUS FOR PROVIDING REMOTE ACCESS, CONTROL OF REMOTE SYSTEMS AND UPDATING OF DISPLAY INFORMATION

Klaus E. Schauser, Goleta, Calif., assignor to Expertcity.com, Inc., Santa Barbara, Calif.

Filed Apr. 28, 1999, Appl. No. 301,022
Int. Cl. G06F *15/16;13/00*
U.S. Cl. 345—502 **39 Claims**



1. A system for controlling information displayed on a first processor-based system, on a second processor-based system comprising:

a memory to store instruction sequences by which the first processor-based system is processed; and

a processor coupled to the memory, wherein the stored instruction sequences cause the processor to: (a) examine, at an interval, at least one pixel at a selected location of a currently displayed image by (a.1) determining a non-linear order of examination and (a.2) examining, at the interval, the at least one pixel at the selected location of the currently displayed image; (b) compare the location with a corresponding location of a previously displayed image to determine if the previously displayed image has been changed; (c) transmitting location information representing the change; and (d) storing the changed information on the second processor-based system.

US 6,331,856 B1

VIDEO GAME SYSTEM WITH COPROCESSOR PROVIDING HIGH SPEED EFFICIENT 3D GRAPHICS AND DIGITAL AUDIO SIGNAL PROCESSING

Timothy J. Van Hook, Menlo Park; Howard H. Cheng, San Francisco; Anthony P. DeLaurier, Sunnyvale; Carroll P. Gossett, Mountain View; Robert J. Moore, Sunnyvale; Stephen J. Shepard, Cupertino; Harold S. Anderson, Morgan Hill; John Princen, Sunnyvale; Jeffrey C. Doughty, Palo Alto; Nathan F. Pooley, Mountain View; Byron Sheppard, Santa Cruz, all of Calif.; Genyo Takeda, Hirakata, and Shuhei Kato, Otsu, both of Japan, assignors to Nintendo Co., Ltd., Osaka, Japan, and Silicon Graphics, Inc., Mountain View, Calif.

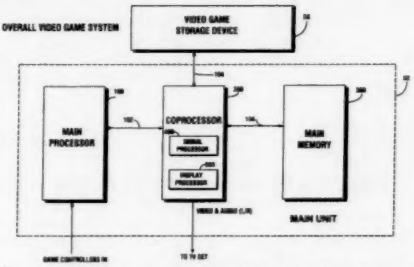
Filed Nov. 22, 1995, Appl. No. 561,718
Int. Cl. G06F *15/16*
U.S. Cl. 345—503 **2 Claims**

1. An interactive video game system comprising:

an interactive user input device;

a main processor coupled to the input device, the main processor having an address space, the main processor interactively selecting a point of view in response to inputs from the user input device;

a coprocessor coupled to the main processor, the coprocessor providing a predetermined graphics feature set for interactively generating image data in response to the selected point of view by projecting polygons representing a three dimensional world onto a two dimensional viewing plane, the coprocessor including:



a signal processor that is shared between at least graphics functions and audio processing functions, the signal processor including a scalar unit and a vector unit, the vector unit capable of performing plural calculations in parallel, the signal processor including a microcode store that stores microcode, the signal processor executing the microcode in the microcode store to perform the graphics and audio processing functions;

a display processor comprising display pipeline hardware that alternatively provides a one-pixel-per-cycle mode and a two-pixel-per-cycle mode to minimize hardware while providing a rich feature set including level-of-detail processing, the display pipeline hardware including a texture memory having first and second parts, the texture memory first part being capable of storing texture maps that are color indexed and texture maps that are not color indexed, the texture memory second part being capable of storing texture maps and/or color lookup tables for the color indexed texture maps,

a video interface,

an audio interface,

a serial interface, and

a parallel peripheral interface,

wherein each of the signal processor, the display processor, the video interface, the audio interface, the serial interface and the parallel peripheral interface includes circuitry for accessing a main memory;

the main memory being coupled to the coprocessor via a 9 bit wide bus, the main memory providing a common address space for the coprocessor and the main processor, the main memory storing at least the following data structures:

instructions for execution by the main processor;

a color frame buffer;

a depth buffer;

graphics microcode;

audio processing microcode;

at least one display list;

at least one texture map; and

at least one audio output buffer;

a video signal generating circuit coupled to the coprocessor video interface, the video signal generating circuit generating a video signal for display on a color television set;

a removable storage device including a housing, a security chip, a read only memory and at least one further memory device, the coprocessor including an arrangement that maps the read only memory and the further memory device into the main processor address space, the read only memory initially storing the graphics and audio processing microcode; and

a connector that connects the coprocessor to the removable storage device; and

a serial peripheral interface circuit coupled to the coprocessor serial interface, the serial peripheral interface circuit including

a processor that performs serial interface functions and security functions and further includes a boot ROM that provides main processor initial program load instructions, the serial interface circuit processor being coupled to the removable storage device security chip through the connector.

US 6,331,857 B1

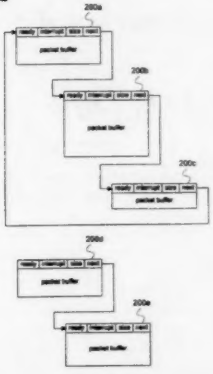
PACKETIZED COMMAND INTERFACE TO A GRAPHICS PROCESSOR

Zahid S. Hussain, San Carlos, and Timothy J. Millet, Palo Alto, both of Calif., assignors to Silicon Graphics, Incorporated, Mountain View, Calif.

Division of application No. 08/967,085, filed on Nov. 10, 1997, now Pat. No. 6,075,546. This application Nov. 23, 1999, Appl. No. 448,907.

Int. Cl. G06T *15/00*

U.S. Cl. 345—522 **5 Claims**



1. A method for executing graphics commands in a host computer system having a host processor, a graphics processor and a memory addressable by the host and graphics processors, the method including the steps of:

providing a first rendering context and a second rendering context, the first and second rendering contexts including at least one respective rendering packet;

selecting a rendering packet of the first rendering context;

reading a variable in the selected rendering packet of the first rendering context to determine if the selected rendering packet of the first rendering context is available for processing;

executing graphics commands stored in the selected rendering packet of the first rendering context;

receiving a request to begin processing the rendering packets of the second rendering context;

writing context information describing the state of the graphics processor to a save/restore rendering packet;

selecting a rendering packet of the second rendering context;

reading a variable in the selected rendering packet of the second rendering context to determine if the selected rendering packet of the second rendering context is available for processing; and

executing graphics commands stored in the selected rendering packet of the second rendering context.

US 6,331,858 B2

DISPLAY TERMINAL USER INTERFACE WITH ABILITY TO SELECT REMOTELY STORED SURFACE FINISH FOR MAPPING ONTO DISPLAYED 3-D SURFACE

Kim J. Fisher, Ipswich, United Kingdom, assignor to British Telecommunications public limited company, London, United Kingdom

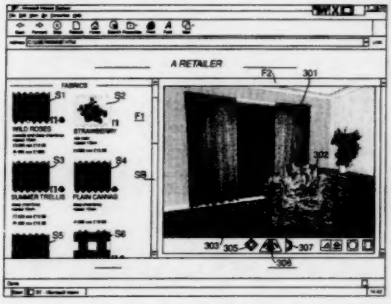
PCT No. PCT/GB98/01022, § 371 Date Jun. 2, 1998, § 102(e) Date Jun. 2, 1998, PCT Pub. No. WO98/47106, PCT Pub. Date Oct. 22, 1998

PCT Filed Apr. 7, 1998, Appl. No. 77,604

Claims priority, application United Kingdom, Apr. 16, 1997, 9707704

Int. Cl. G09G *5/00*

U.S. Cl. 345—582 **33 Claims**



1. A user interface for a display terminal, the user interface comprising:

a) a 3-dimensional display region including at least one displayed object;

b) a surface finish selector including a display of samples of surface finishes arranged to display to the user a plurality of alternative surface finishes for mapping onto at least one of said displayed objects, wherein each of the surface finish samples is associated with a network address of data defining a surface finish;

c) a user input device for selecting one of the plurality of alternative surface finish samples;

d) means responsive to the user input device for reading data corresponding to a surface finish selected by the user, and

e) a display generator for mapping the selected surface finish onto the displayed object using said data.

US 6,331,859 B1

VIDEO SKIMMING SYSTEM UTILIZING THE VECTOR RANK FILTER

Regis J. Crinon, Camas, Wash., assignor to Sharp Laboratories of America, Inc., Camas, Wash.

Filed Apr. 6, 1999, Appl. No. 287,390

Int. Cl. G06F *15/00*

U.S. Cl. 345—619 **73 Claims**

1. A method of creating a summary of a plurality of video frames comprising the steps of:

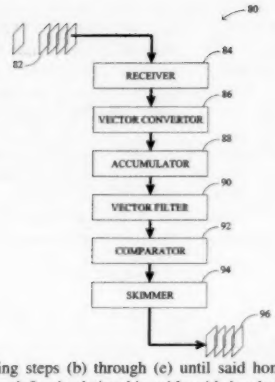
(a) receiving a first frame;

(b) receiving a subsequent frame;

(c) resolving a homogeneity of content of said first frame and each said subsequent frame received;

(d) identifying at least one key frame from said first frame and each said subsequent frame received having content most homogeneous with that of said first frame and each said subsequent frame;

(e) comparing said homogeneity of said first frame and each said subsequent frame with a threshold homogeneity; and



(f) repeating steps (b) through (e) until said homogeneity has some predefined relationship with said threshold homogeneity.

US 6,331,860 B1

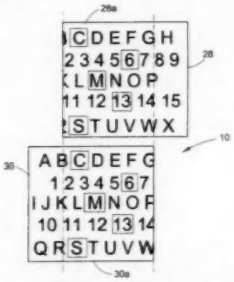
METHOD AND APPARATUS FOR STITCHING SCANNED IMAGE SEGMENTS TOGETHER TO FORM AN OVERSIZED DOCUMENT

Keith T. Knox, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1999, Appl. No. 449,327

Int. Cl. G06T *15/30*

U.S. Cl. 345—620 **24 Claims**



5. A method for merging together image data representing a plurality of image segments to form an oversized document, comprising:

a) selecting a plurality of image features in an overlapping region of a first image segment and a plurality of image features in a corresponding overlapping region of a second image segment;

b) determining a centroid value for each of the selected image features;

c) determining a scale difference value between a selected image feature of the first image segment and a corresponding image feature of the second image segment based on the centroid values of the selected image feature of the first image segment and the corresponding image feature of the second image segment;

d) determining an orientation difference value between a selected image feature of the first image segment and a corresponding image feature of the second image segment based on the centroid values of the selected image feature of the first image segment and the corresponding image feature of the second image segment;

e) determining a translation value between a selected image feature of the first image segment and a corresponding image feature of the second image segment based on the centroid values of the selected image feature of the first image segment and the corresponding image feature of the second image segment; and

f) merging image data representing the first image segment with image data representing the second image segment based on the scale difference value, the orientation difference value, and the translation value.

US 6,331,861 B1

PROGRAMMABLE COMPUTER GRAPHIC OBJECTS

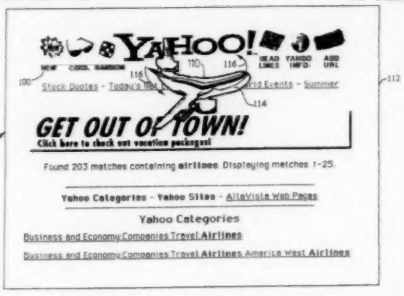
Eval Gever, Tel Aviv; Nir Hermoni, Ramat Gan; Orit Bergman, Tel Aviv; Gil Tayar, Giv'atayim; Eilon Reshef, Tel Aviv; Doron Gill, Giv'atayim; Addy Feuerstein, Tel Aviv; Yaron Caneti, Tel Aviv; Roy Oppenheim, Tel Aviv; Eran Etam, Tel Aviv; Zohar Shpeizer, Tel Aviv; Yoav Borer, Tel Aviv; Eyal Livine, K'far Saba; Ruth Kikin, Tel Aviv; Oren Zuckerman, Ramat Gan, and Ron Kaas, Moshav Ben-Shemen, all of Israel, assignors to Gizmoz Ltd., Tel Aviv, Israel

Provisional application No. 60/013,624, filed on Mar. 15, 1996.

This application Feb. 23, 1999, Appl. No. 255,662.

Int. Cl. G06T *11/60*

U.S. Cl. 345—629 **16 Claims**



1. A method for producing an animated overlay on a graphic display driven by a computer, the display including an array of pixels, the method comprising:

generating a three-dimensional animated image element using a three-dimensional rendering engine;

identifying the pixels of the display written to by the rendering engine in generating the image element;

overlaying a mask corresponding to the identified pixels on a window in the graphic display driven by a software application substantially unrelated to the three-dimensional rendering engine used for the generation of the animated image element, so as to obscure an area of the window covered by the mask; and

displaying the animated image element within the area obscured by the mask.

US 6,331,862 B1

IMAGE EXPANSION DISPLAY AND DRIVER

Yukimitsu Yamada; Ken Kawahata; Hiroyuki Hebiguchi; Tatsumi Fujiyoshi, and Junichi Saito, all of Miyagi-ken, Japan, assignors to LG Philips LCD Co., Ltd., Seoul, Rep. of Korea, and Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1999, Appl. No. 286,864

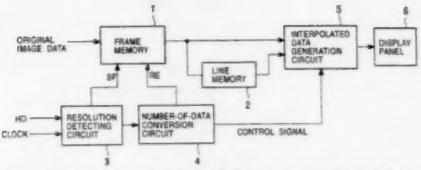
Claims priority, application Japan, Jul. 6, 1988, 10-190838; Apr. 7, 1998, 10-095041

Int. Cl. H04N *7/01*; **G09G** *3/36*

U.S. Cl. 345—660 **5 Claims**

4. A driver circuit for use in an image display device, comprising:

a display panel having predetermined numbers of pixels defined in horizontal and vertical directions, respectively;



a source driver connected to said display panel, for supplying a horizontal image signal having said predetermined number of pixels in the horizontal direction to said display panel;

a signal selection circuit which generates two image signals by copying a given image signal when said given image signal has a smaller number of pixels in the horizontal direction than said predetermined number, or generates two image signals by dividing the given image signal into two parts when said given image signal has said predetermined number of pixels in the horizontal direction, and then sequentially transmitting the resultant copied or divided image signals to said source driver;

a resolution detecting circuit for determining on the basis of a synchronizing signal whether the given image signal has the predetermined number of pixels in the horizontal direction or a smaller number of pixels in the horizontal direction than said predetermined number and supplying a control signal to said signal selection circuit to indicate whether the signal selection circuit should output the copied image signals or divided image signals;

a frequency divider for dividing the given image signal into two parts and supplying resultant divided image signals to said signal selection circuit; and

a horizontal image signal control circuit for sequentially supplying a pair of sampling timing signals to said source driver thereby making said source driver sequentially generate horizontal image signals each having a smaller number of pixels in the horizontal direction than said predetermined number such that a horizontal image signal having said predetermined number of pixels in the horizontal direction is obtained when said horizontal image signals sequentially generated by said source driver are combined.

US 6,331,863 B1

INTELLIGENT SCROLLING

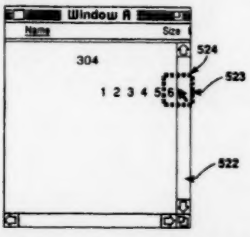
John R. Meier; John Sullivan, both of Cupertino, and Paul Mercer, Palo Alto, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of application No. 08/465,918, filed on Jun. 6, 1995, now Pat. No. 5,825,349, which is a continuation of application No. 08/301,314, filed on Sep. 6, 1994, now abandoned, which is a continuation of application No. 07/965,218, filed on Oct. 23, 1992, now abandoned, which is a continuation of application No. 07/635,228, filed on Dec. 28, 1990, now Pat. No. 5,196,838. This application Oct. 19, 1998, Appl. No. 175,225.

This patent is subject to a terminal disclaimer.

Int. Cl. G09G *5/34*

U.S. Cl. 345—684 **56 Claims**



1. A computer system having a program which comprises:

means for determining if a first item within a data display area of a first region of a display has been selected by a user by positioning a cursor over said first item so that said first item is associated with said cursor for further operation or manipulation;

means for determining if said cursor has been moved with said first item and positioned over a predetermined scrolling area of said first region;

means for determining whether to scroll said contents of said first region or to allow said first item to be moved from said first region to a second region; and

means for scrolling the contents of said data display area of said first region while said cursor is positioned over said predetermined scrolling area and while said first item is associated with said cursor, to display a second item and wherein said predetermined scrolling area scrolls the contents along only a first direction when in a first context.

US 6,331,864 B1

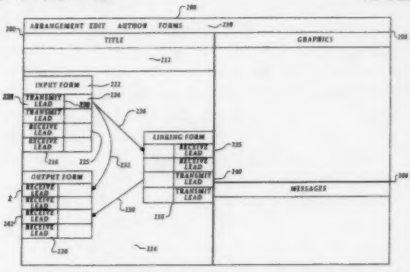
REAL-TIME MULTIMEDIA VISUAL PROGRAMMING SYSTEM

Geoffrey P. Coco, and C. Phillip Reay, both of Seattle, Wash., assignors to Onadime, Inc., Seattle, Wash.

Filed Sep. 23, 1997, Appl. No. 935,618

Int. Cl. G06F *9/44; 13/00*

U.S. Cl. 345—763 **56 Claims**



1. A method for controlling output sources using input sources, said method comprising:

(a) receiving a first raw data value based on an input function performed on an input source;

(b) calculating a first normalized value for the received first raw data value;

(c) changing a second normalized value based on the calculated first normalized value;

(d) calculating a second raw data value for an output source based on the changed second normalized value; and

(e) controlling the output source with an output function provided with the second raw data value, and wherein (a), (b), (c), (d) and (e) are performed in real-time.

US 6,331,865 B1

METHOD AND APPARATUS FOR ELECTRONICALLY DISTRIBUTING AND VIEWING DIGITAL CONTENTS

James Sachs, Menlo Park; Thomas W. Pomeroy, Atherton; Aleksey Novicov, Palo Alto; Garth Conboy; Erik Walter, both of La Jolla; William S. Leshner; Brady Duga, both of Carlsbad, and Richard Wotiz, Saratoga, all of Calif., assignors to Softbook Press, Inc., Menlo Park, Calif.

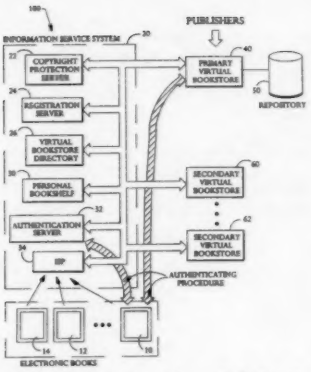
Filed Oct. 16, 1998, Appl. No. 173,975

Int. Cl. G06F *3/00*

U.S. Cl. 345—776 **43 Claims**

1. A system for electronically distributing digital contents, the digital contents including textual, graphical and pictorial information, the system comprising:

at least one portable electronic book, the portable electronic book operative to request a digital content from a catalog of



distinct digital contents, to receive and display the requested digital content in readable form;

an information services system, in electrical communication with the portable electronic book, the information services system comprising:

an authentication server for authenticating the identity of the requesting portable electronic book; and

a copyright protection server for rendering the requested digital content sent to the requesting portable electronic book readable only by the requesting portable electronic book ensuring the digital content cannot be redistributed;

at least one primary virtual bookstore in electrical communication with the information services system, the primary virtual bookstore being a computer-based storefront accessible by the portable electronic book, the primary virtual bookstore including:

the catalog of distinct digital contents; and

a repository, in electrical communication with the primary virtual bookstore, for storing the distinct digital contents listed in the catalog.

US 6,331,866 B1

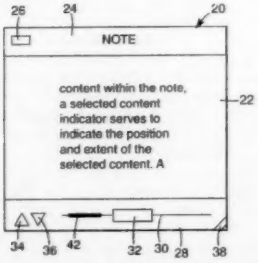
DISPLAY CONTROL FOR SOFTWARE NOTES

Peter M. Eisenberg, Minneapolis, Minn., assignor to 3M Innovative Properties Company, St. Paul, Minn.

Filed Sep. 28, 1998, Appl. No. 162,216

Int. Cl. G06F *3/00*

U.S. Cl. 345—784 **38 Claims**



1. A method for controlling presentation of the content of a note on a display, the method comprising:

displaying a portion of the note content;

displaying a content extent bar representative of the extent of the note content, the content extent bar extending in a horizontal direction;

processing user input specifying a position on the content extent bar, the specified position being representative of a corresponding position in the note content; and

displaying a different portion of the note content proximate to the corresponding position.

US 6,331,867 B1

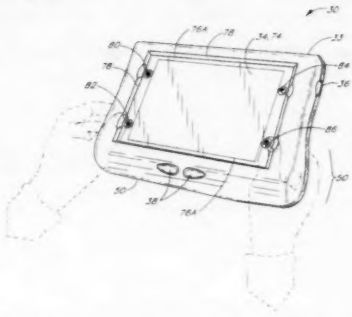
ELECTRONIC BOOK WITH AUTOMATED LOOK-UP OF TERMS OF WITHIN REFERENCE TITLES

Martin F. Eberhard, Woodside, and Marc E. Tarpenning, Palo Alto, both of Calif., assignors to Nuvomedia, Inc., Palo Alto, Calif.

Provisional application No. 60/078,782, filed on Mar. 20, 1998. This application May 28, 1998, Appl. No. 86,058.

Int. Cl. G06F *15/00*

U.S. Cl. 345—864 **20 Claims**



1. A hand-held computing device that is adapted to be used by a user to read literary works, the device comprising:

a housing which supports a processor, memory, and a touch-sensitive display; and

a plurality of titles stored within the memory, the plurality of titles including at least one literary title that is adapted to be viewed on the display as a literary work, and at least one reference title that is adapted to be used as a reference work;

wherein the processor is programmed to respond to user selection of a displayed term of a literary title for look-up by performing at least the following steps:

(a) identifying a reference title that corresponds to the literary title, wherein identifying the reference title that corresponds to the literary title comprises:

identifying the reference title by identifying a designated reference title if the designated reference title has been designated for the literary title; and

if the designated reference title has not been designated for the literary title, searching the plurality of titles and identifying a default reference title using a classification tag embedded in the literary title that describes the literary title and a classification tag embedded in the default reference title that describes the default reference title;

(b) searching the reference title identified in step (a) for the displayed term; and

(c) displaying results of the search in step (b) on the touch-sensitive display.

US 6,331,868 B1

THERMAL PRINTHEAD AND METHOD OF MAKING THE SAME

Takumi Yamade; Hiroaki Hayashi, and Teruhisa Sako, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

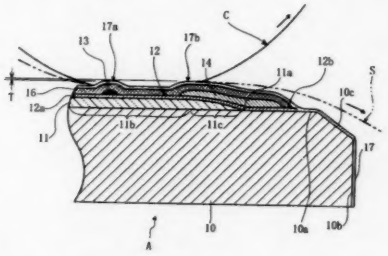
PCT No. PCT/JP00/00579, § 371 Date Oct. 16, 2000, § 102(e) Date Oct. 16, 2000, PCT Pub. No. WO00/48839, PCT Pub. Date Aug. 24, 2000

PCT Filed Feb. 2, 2000, Appl. No. 673,375

Claims priority, application Japan, Feb. 18, 1999, 11-039577

Int. Cl. B41J *2/335*

U.S. Cl. 347—208 **18 Claims**



1. A thermal printhead comprising:

an insulating substrate having an upper surface and a side surface;

a heat retaining glaze layer formed on the upper surface of the substrate;

a heating resistor formed on the glaze layer;

a common electrode including a plurality of teeth connected to the heating resistor, and a connecting portion connecting the teeth with each other;

a plurality of individual electrodes connected to the heating resistor;

an electrode auxiliary layer formed on the connecting portion of the common electrode;

an overcoat layer for covering the heating resistor and the electrode auxiliary layer; and

a protective layer for covering the overcoat layer;

wherein the connecting portion of the common electrode includes a first region formed directly on the glaze layer and a second region formed directly on the upper surface of the substrate, the electrode auxiliary layer being arranged to contact both the first and the second regions of the connecting portion.

US 6,331,869 B1

METHOD AND APPARATUS FOR ELECTRONICALLY DISTRIBUTING MOTION PANORAMIC IMAGES

John Louis Warpakowski Furlan, Palo Alto, and Edward Driscoll, Jr., Portola Valley, both of Calif., assignors to Be Here Corporation, Cupertino, Calif.

Filed Aug. 7, 1998, Appl. No. 131,186

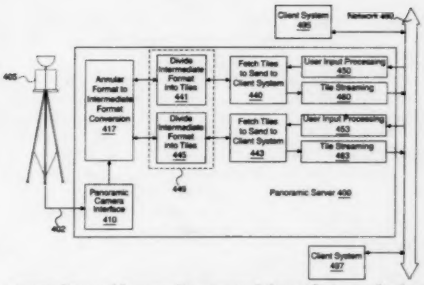
Int. Cl. H04N *7/18*

U.S. Cl. 348—36 **42 Claims**

1. An electronic image distribution apparatus, said apparatus comprising:

a motion panoramic image source, said motion panoramic image source providing successive frames of panoramic images;

a division unit, said division unit dividing said successive frames of panoramic images into tiles, said tiles being spatially variant; and


Client System 495
Network 490
405
Annular Format to Intermediate Format Conversion 417
Divide Intermediate Format into Tiles 441
Divide Intermediate Format into Tiles 445
Fetch Tiles to Send to Client System 440
Fetch Tiles to Send to Client System 443
User Input Processing 450
Tile Streaming 460
User Input Processing 453
Tile Streaming 463
Panoramic Camera Interface 410
402
Panoramic Server 400
Client System 497

a transmitter, said transmitter transmitting a first set of selected tiles to a first client system to construct a view in said client system.

US 6,331,870 B1

DIRECT BROADCAST IMAGING SATELLITE SYSTEM APPARATUS AND METHOD FOR PROVIDING REALTIME, CONTINUOUS MONITORING OF EARTH FROM GEOSTATIONARY EARTH ORBIT

Malcolm A. LeCompte, Diamondhead, Miss., assignor to Astro-Vision, Inc., Stennis Space Center, Miss.

Continuation of application No. 09/344,358, filed on Jun. 25, 1999. This application May 21, 2001, Appl. No. 860,671.

Int. Cl. H04N *7/18*

U.S. Cl. 348—144 **54 Claims**

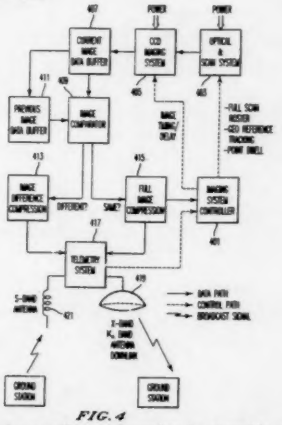


FIG. 4

1. An imaging satellite configured to be placed in geostationary orbit, comprising:

an image sensor configured to be positioned toward Earth when in geostationary orbit and configured to produce data of a series of images of a portion of a surface of the Earth;

another image sensor configured to produce data of full disk images of the Earth; and

a transmitter configured to transmit the data to a remote location so that said series of images may be viewed in real-time at said remote location, wherein

said series of images having respective resolutions that correspond with an image at nadir having at least a 500 m resolution when said satellite is positioned in geostationary orbit.

US 6,331,871 B1

SYSTEM FOR PRODUCING TIME-INDEPENDENT VIRTUAL CAMERA MOVEMENT IN MOTION PICTURES AND OTHER MEDIA

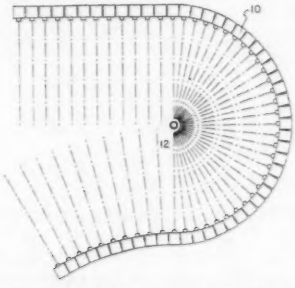
Dayton V. Taylor, New York, N.Y., assignor to Digital Air, Inc., New York, N.Y.

Continuation of application No. 08/909,233, filed on Aug. 11, 1997, now Pat. No. 6,154,251, which is a continuation of application No. 08/362,653, filed on Dec. 21, 1994, now Pat. No. 5,659,323. This application Oct. 27, 2000, Appl. No. 698,428.

This patent is subject to a terminal disclaimer.

Int. Cl. H04N *7/18*

U.S. Cl. 348—159 **13 Claims**



1. A motion picture made by a process comprising the steps of:

providing an array of cameras deployed along a preselected path with each camera focused on a common scene;

triggering each of the cameras to substantially simultaneously record a still image of the scene;

transferring the still images in a preselected order along the path into a time-sequence of frames; and

outputting the time-sequence of frames in a motion picture medium, thereby creating the illusion that a single motion picture camera has moved along the path.

US 6,331,872 B1

METHOD AND APPARATUS FOR TAKING VISUAL IMAGES

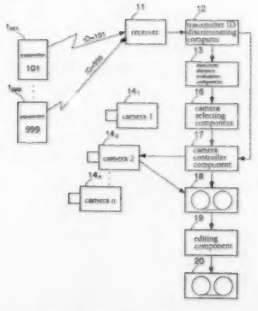
Makoto Hyuga, 25-58, Misumi-cho 2-chome, Higashimurayama-shi Tokyo 189, Japan

Continuation of application No. 09/075,588, filed on May 11, 1998, now abandoned, which is a continuation of application No. 08/464,650, filed on Jun. 21, 1995, now abandoned. This application Dec. 13, 1999, Appl. No. 460,224.

This patent is subject to a terminal disclaimer.

Int. Cl. H04N *5/225*

U.S. Cl. 348—207 **4 Claims**



1. A method of taking pictures of a subject at a location on a golf course comprising,

transmitting signals including locational data from the subject,

receiving the signals from the subject and determining from the locational data, a direction/distance of the subject,

selecting, based on the direction/distance of the subject, a camera from a plurality of cameras installed around the golf course and orienting the selected camera toward the subject,

computing with said locational data a distance between the subject and a location of the selected camera,

determining a degree of selected camera zooming responsive to said computed distance and zooming the selected camera to the zooming degree thereby adjusting an angle of view,

focusing the selected camera responsive to said computed distance, and

then taking a picture of the subject with the selected camera.

US 6,331,873 B1

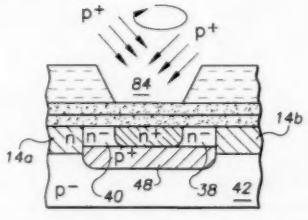
HIGH-PRECISION BLOOMING CONTROL STRUCTURE FORMATION FOR AN IMAGE SENSOR

Barry E. Burke, Lexington, Mass., and Eugene D. Savoye, Lancaster, Pa., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 3, 1998, Appl. No. 204,483

Int. Cl. H04N *3/14*

U.S. Cl. 348—314 **16 Claims**



1. A semiconductor imaging device and blooming control structure comprising:

a semiconductor substrate;

an electrical charge collection region configured in the substrate to accumulate electrical charge photogenerated in the substrate, up to a characteristic charge collection capacity;

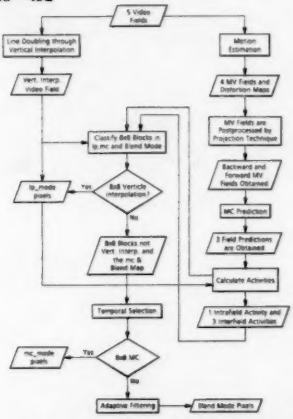
a blooming drain region configured in the substrate laterally spaced from the charge collection region and including an extended path of a conductivity type and level selected for conducting charge in excess of the characteristic charge collection capacity away from the charge collection region; and

a blooming barrier region, configured in the substrate adjacent to and laterally spacing the charge collection and blooming drain regions by a blooming barrier width that corresponds to an acute blooming barrier impurity implantation angle with the substrate, the blooming barrier region being of a conductivity type and level selected based on the blooming barrier width to produce a corresponding electrical potential barrier between the charge collection and blooming drain regions.

US 6,331,874 B1
MOTION COMPENSATED DE-INTERLACING

Diego P. de Garrido, Palo Alto; Kamil Metin Uz, Los Altos; Leslie D. Kohn, Fremont, and Didier LeGall, Los Altos, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 29, 1999, Appl. No. 342,842
Int. Cl. H04N *7/01*
U.S. Cl. 348—452 **27 Claims**


5 Video Fields
Line Doubling through Vertical Interpolation
Motion Estimation
Vert. Interp. Video Field
4 MV Fields and Distortion Maps
MV Fields are Postprocessed by Projection Technique
Classify 8x8 Blocks in tp_mc and Blend Mode
Backward and Forward MV Fields Obtained
8x8 Vertcle Interpolation ?
Yes
No
tp_mode pixels
MC Prediction
8x8 Blocks not Vert. Interp. and the mc & Blend Map
3 Field Predictions are Obtained
Calculate Activities
Temporal Selection
1 Intrafield Activity and 3 Interfield Activities
mc_mode pixels
8x8 MC
Adaptive Filtering
Blend Mode Pixels

1. A method for use in adding data to an incomplete source video field that is part of a temporal sequence of fields of video data, the method comprising

deriving intermediate sets of motion compensation vectors that characterize motion occurring between the source video field and each of four other fields of video data in the temporal sequence,

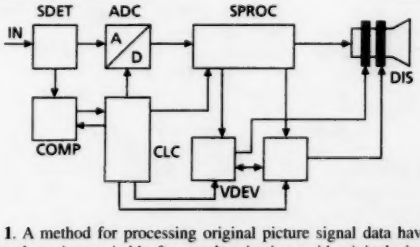
processing the intermediate sets of motion compensation vectors to obtain a smaller number of final sets of motion compensation vectors, and

using the final sets of motion compensation vectors to predict data to be added to the incomplete source video field.

US 6,331,875 B1
METHOD AND DEVICE FOR ARRANGING DIGITIZED IMAGE SIGNALS OR DATA IN ORTHOGONAL ROWS AND COLUMNS

Gangolf Hirtz, Niedereschach; Thomas Hollmann, Bad Dürrheim; Albrecht Rothermel, Neu-ulm, and Rainer Schweer, Niedereschach, all of Germany, assignors to Deutsch THOMSON-Brandt GmbH, Villingen-Schwennigen, Germany

Filed Mar. 4, 1998, Appl. No. 34,913
Claims priority, application Germany, Mar. 13, 1997, 197 10 270
Int. Cl. H04N *11/00*
U.S. Cl. 348—497 **23 Claims**



1. A method for processing original picture signal data having signal portions suitable for synchronization, said original picture signal data further having a non-constant time base, comprising:

receiving said original picture signal data;

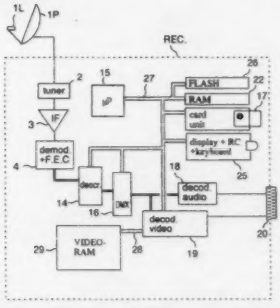
generating lines of picture signal data having a constant line duration from said original picture signal data; and

generating, using said original picture signal data synchronization portions, pictures from said lines of said picture signal data, of which pictures the number of lines per field or lines per frame is variable so as to adapt to said non-constant time base.

US 6,331,876 B1
METHOD OF UPDATING SOFTWARE IN A VIDEO RECEIVER

John Koster, and Frank Bosveld, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1997, Appl. No. 962,152
Claims priority, application France, Nov. 12, 1996, 96 13757
Int. Cl. H04N *7/00;7/10;* **H04H** *1/02;1/00*
U.S. Cl. 348—725 **10 Claims**



1. A method of updating software in a video receiver having receiver means for receiving video signals and digital data sent by a television transmitter, said receiver means comprising a digital video processing module for processing the received video signal, a video memory connected by a first bus to the digital video processing module for selectively storing the video signal, an output coupled to the digital video processing module and for selectively supplying the video signal and the stored video signal, and a microprocessor connected by a second bus to a rewritable program memory having basic instructions for operating the video receiver written therein, wherein said method comprises the steps:

receiving video signals;

processing said received video signal in said digital video processing module;

selectively storing said video signal in said video memory; and

selectively supplying said video signal and said stored video signal to output,

characterized in that said method further comprises the steps:

receiving new software for entirely replacing the basic instructions written in said rewritable program memory, said new software being received in successive parts;

verifying, one by one, the successive parts of the received new software using the microprocessor;

provisionally storing each of the verified successive parts of the received new software in the video memory of the digital video processing module until all of the successive parts of the new software are received, verified and stored in the video memory, indicating that the new software, in toto, is stored in the video memory; and

transferring the new software, in toto, from the video memory to the rewritable program memory, whereby the basic instructions in the rewritable program memory are not corrupted in the event that the reception of the successive parts of the new software is interrupted prior to receipt of the new software, in toto.

US 6,331,877 B1

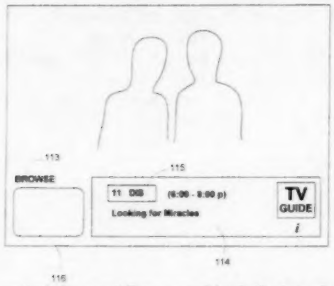
ELECTRONIC TELEVISION PROGRAM GUIDE SCHEDULE SYSTEM AND METHOD

Gerard E. Bennington, Englewood; George Backer, Highlands Ranch; Shawn Green; Bill Cooper, both of Littleton; Dave Spell, Denver; Rosetta Rogers, Aurora, and Bruce Davis, Greenwood Village, all of Colo., assignors to TV Guide Magazine Group, Inc., New York, N.Y.

Continuation of application No. 08/119,367, filed on Sep. 9, 1993. This application Sep. 28, 1999, Appl. No. 406,973.

Int. Cl. H04N *5/445;5/50*

U.S. Cl. 348—731 **30 Claims**



1. A method for providing a combined display of television programs and television program listings in a display screen, the method comprising:

completely displaying in a video window a first television program associated with a first television program listing when a user identifies the first television program listing, wherein the video window is smaller than the display screen; and

completely displaying in the video window a second television program associated with a second television program listing when the user identifies the second television program listing.

US 6,331,878 B1

REFLECTION LIGHT ABSORBING PLATE AND DISPLAY PANEL FOR USE IN A DISPLAY APPARATUS

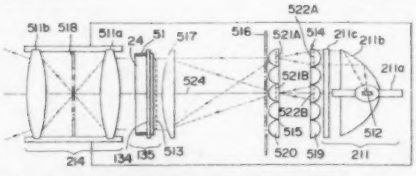
Hiroshi Takahara, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of application No. 08/504,648, filed on Jul. 20, 1995, now Pat. No. 5,875,013. This application Oct. 16, 1998, Appl. No. 173,779.

Claims priority, application Japan, Jul. 20, 1994, 6-167944; Mar. 6, 1995, 7-045642

Int. Cl. G02F *1/1335;* **G03B** *21/00*

U.S. Cl. 349—5 **26 Claims**



1. A projection type display apparatus comprising:

a light source being operable to emit light, said light source having an arc length greater than 2.5 mm and less than 5.0 mm;

light modulating means for forming an optical image as a change in a diffuse state of light, said light modulating means having a light modulating layer;

secondary light emitting means for emitting light by condensing and converging the light emitted from said light source;

projecting means for projecting the optical image formed by said light modulating means;

a first stop being operable to selectively pass primarily the light having passed an effective area of said secondary light emitting means, said first stop having an aperture shape and being arranged on a light incidence side of said light modulating means;

a second stop being operable to selectively pass the light having passed said first stop in a light transmitting state of said light modulating layer of said light modulating means, said second stop having an aperture shape and being arranged on a light outgoing side of said light modulating means, wherein

said light modulating means is illuminated by the light emitted from said secondary light emitting means.

US 6,331,879 B1

LIQUID CRYSTAL PROJECTOR WITH AN ILLUMINATION OPTICAL SYSTEM

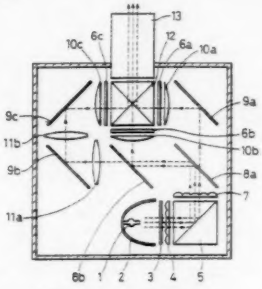
Yasumasa Sawai; Takashi Ohta, both of Sakai; Nobuo Mushiake, Minamikawachi-Gun; Hideki Nagata, Sakai, and Soh Ohzawa, Toyonaka, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 18, 1996, Appl. No. 749,887

Claims priority, application Japan, Nov. 20, 1995, 7-300922; Nov. 20, 1995, 7-300923; Nov. 20, 1995, 7-300924

Int. Cl. G02F *1/1335;* **G03B** *21/00;* **G02B** *27/14*

U.S. Cl. 349—9 **29 Claims**



1. A liquid crystal projector comprising:

a liquid crystal panel;

an illumination optical system for illuminating the liquid crystal panel, the illumination optical system including:

a light source which emits a beam of light;

a first lens array and a second lens array arranged in this order from the light source, the first and second lens arrays each having a plurality of lenses; and

a polarization changing optical system, arranged between the first and second lens arrays, for separating light having a predetermined polarization component from incident light.

US 6,331,880 B1

LIQUID CRYSTAL DISPLAY AND METHOD FOR FORMING THE SAME

Chang Wook Han, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Division of application No. 08/738,708, filed on Oct. 28, 1996. This application Feb. 25, 1999, Appl. No. 257,300.

Claims priority, application Rep. of Korea, Jan. 15, 1996, 96-00671

This patent is subject to a terminal disclaimer.

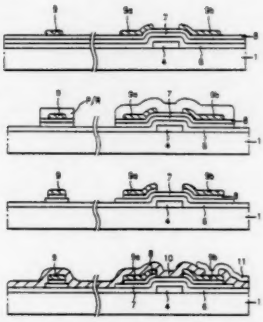
Int. Cl. G02F *1/136;* **H01L** *29/04*

U.S. Cl. 349—43 **16 Claims**

1. A method of forming a liquid crystal display including a thin film transistor, a method comprising the steps of:

forming a gate electrode on a substrate;

sequentially forming a gate insulating layer, a first semiconductor layer, and a second semiconductor layer over the substrate and gate electrode;



forming a conductive layer including a data line and source and drain electrodes on respective portions of the second semiconductor layer; and

selectively removing the first and second semiconductor layers so that the first and second semiconductor layers remain under the data line and on an active area of the thin film transistor, and a peripheral edge of the remaining first semiconductor layer is not covered by the source or drain electrode, the peripheral edge being substantially parallel to the data line,

wherein the step of selectively removing the first and second semiconductor layers includes the steps of:

patterning the second semiconductor layer by using at least a portion of the conductive layer as a mask; and

patterning the first semiconductor layer using a photoresist mask so that the first semiconductor layer remains at least in an active area including under the source and drain electrodes and a channel region of the thin film transistor.

US 6,331,881 B1

LIQUID CRYSTAL DEVICE WITH COMPOSITE LAYER OF CURED RESIN PILLARS AND LIQUID CRYSTAL PHASE AND METHOD OF PRODUCING THE SAME

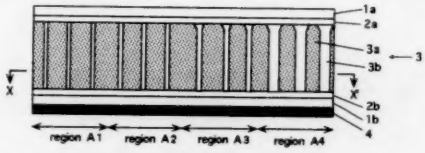
Takuji Hatano, Suita, and Masakazu Okada, Kyoto, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed May 4, 1998, Appl. No. 72,402

Claims priority, application Japan, May 9, 1997, 9-119981

Int. Cl. G02F *1/1333;1/1339*

U.S. Cl. 349—86 **57 Claims**



1. A liquid crystal device comprising:

a pair of substrates; and

a composite layer disposed between said pair of substrates, said composite layer including a cured resin phase and a liquid crystal phase of a liquid crystal material exhibiting a cholesteric characteristic, said composite layer having an area defining one pixel, and said area including a plurality of regions;

wherein a structural condition of said cured resin phase of at least one of said plurality of regions is different from a structural condition of said cured resin phase of another of said plurality of regions so that an electro-optic response in at least one of said plurality of regions is different than an electro-optic response of another of said plurality of regions.

US 6,331,882 B1

OPTICAL MEMBER, CELL SUBSTRATE AND LIQUID-CRYSTAL DISPLAY

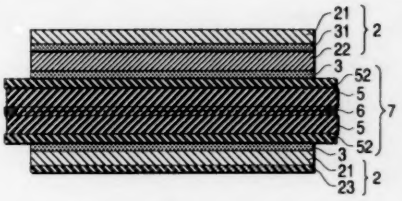
Kiichi Shimodaira, and Masayuki Satake, both of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Nov. 10, 1999, Appl. No. 437,141

Claims priority, application Japan, Nov. 26, 1998, 10-353887

Int. Cl. G02F *1/1333;1/1335;* **B32B** *9/00;7/02*

U.S. Cl. 349—122 **11 Claims**



1. An optical member comprising:

an optical material; and

a pressure sensitive adhesion layer disposed on at least one surface of said optical material and having a 1000% elastic modulus in a range of from 3 g/mm^2 to 10 g/mm^2 at 90° C.,

wherein said optical member exhibits characteristic in which a quantity of curl is not larger than 3 mm per 12 inches when said optical member bonded to a resin substrate through said pressure sensitive adhesion layer is heated at 80° C. for 150 hours.

US 6,331,883 B1

FLAT PANEL DISPLAY DEVICE AND MANUFACTURING METHOD THEREOF

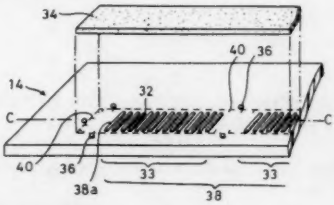
Tatsuya Hasegawa; Masaichi Ohkubo; Yoshihiro Ito, and Sanae Tokunaga, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 19, 1998, Appl. No. 195,539

Claims priority, application Japan, Nov. 19, 1997, 9-318387; Mar. 6, 1998, 10-055047

Int. Cl. G02F *1/1343*

U.S. Cl. 349—152 **7 Claims**



1. A flat panel display comprising:

a display panel having a plurality of display picture elements;

a first wiring board having a first terminal group arranged substantially at one end of said first wiring board, another end of said first wiring board being connected with said display panel such that wirings on said first wiring board be electrically connected to wirings on said display panel;

a second wiring board for outputting a control signal to said display panel, having a second terminal group corresponding to said first terminal group at a main surface thereof, and said second terminal group being electrically connected to said first terminal group through an anisotropic conductive film,

wherein said second wiring board includes position indicators for indicating a disposition position of said anisotropic conductive film.

US 6,331,884 B1

METHOD OF MAKING A LIQUID CRYSTAL DEVICE

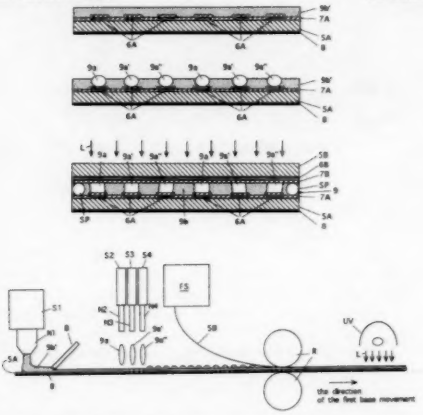
Naoki Masazumi, Amagasaki; Nobuyuki Kobayashi, Kobe; Masakazu Okada, Kyoto; Kiyofumi Hashimoto, and Takuji Hatano, both of Suita, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jul. 14, 1998, Appl. No. 115,495

Claims priority, application Japan, Jul. 18, 1997, 9-193488

Int. Cl. G02F *1/1339*

U.S. Cl. 349—156 **52 Claims**



1. A method of making a liquid crystal device having a plurality of cells of liquid crystal material, comprising the steps of:

(a) preparing a first base having a first surface;

(b) providing, in an area within which said plurality of cells are to be formed, a first phase of a resin partition material and a plurality of second phases of at least one liquid crystal material on said first surface, said plurality of second phases being spatially dispersed in a first prescribed pattern within the first phase of the resin partition material, the first phase of the resin partition material being nonsolidified; and

(c) solidifying said first phase of said resin partition material.

US 6,331,885 B1

STAGE APPARATUS, SCANNING TYPE EXPOSURE APPARATUS, AND DEVICE PRODUCED WITH THE SAME

Kenji Nishi, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation-in-part of application No. PCT/JP98/04223, filed on Sep. 18, 1998. This application Mar. 14, 2000, Appl. No. 525,732.

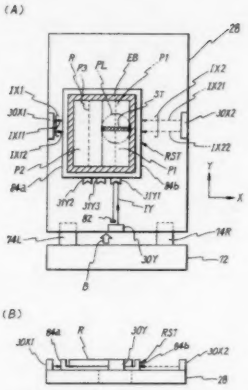
Claims priority, application Japan, Sep. 19, 1997, 9-273420; Sep. 26, 1997, 9-279500; Oct. 10, 1997, 9-293249; Jul. 27, 1998, 10-226500

Int. Cl. G03B *27/42*; **G01B** *11/00*

U.S. Cl. 355—53 **46 Claims**

1. A scanning type exposure apparatus for transferring a pattern on a mask to a substrate via a projection optical system by synchronously moving the mask and the substrate, the scanning type exposure apparatus comprising:

a mask stage arranged on a side of an object plane of the projection optical system;



a substrate stage arranged on a side of an image plane of the projection optical system;

a plurality of corner cubes provided on the mask stage and arranged in a second direction perpendicular to a first direction in which the mask is synchronously moved; and

a first interferometer which radiates a measuring beam to the mask stage in the first direction, and receives the measuring beam reflected by one of the plurality of corner cubes selected depending on a position of the mask stage in the second direction.

US 6,331,886 B2

IMAGE READING APPARATUS

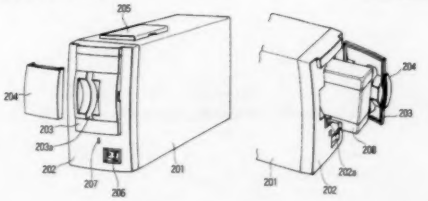
Masatoshi Nagano, Tokyo, and Toshimi Iizuka, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1999, Appl. No. 244,364

Claims priority, application Japan, Feb. 9, 1998, 10-027185; Mar. 18, 1998, 10-068537

Int. Cl. G03B *27/62*

U.S. Cl. 355—75 **11 Claims**



1. An image reading apparatus capable of reading a plurality of film originals having respective different formats, said apparatus comprising:

(a) a first film loading slot arranged on the predetermined surface of said image reading apparatus for inserting therein a first format film original;

(b) a first cover for covering said first film loading slot, wherein said first cover has a second film loading slot for inserting therein a second format film original; and

(c) a second cover for covering said second film loading slot.

US 6,331,887 B1
OUTDOOR RANGE FINDER

Kazunari Shiraishi; Hitoshi Wakisako; Yoshinaga Maruyama; Kyoji Yano, and Moriyuki Nakashima, all of Fukuoka, Japan, assignors to Kabushiki Kaisha Yaskawa Denki, and Kyushu Electric Power Co., Ltd., both of Fukuoka, Japan

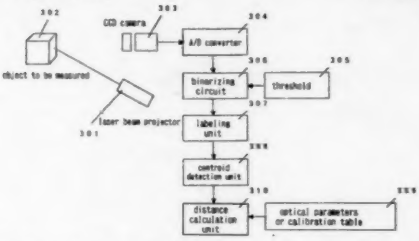
PCT No. PCT/JP98/00594, § 371 Date Sep. 23, 1999, § 102(e) Date Sep. 23, 1999, PCT Pub. No. WO98/36238, PCT Pub. Date Aug. 20, 1998

PCT Filed Feb. 12, 1998, Appl. No. 355,707

Claims priority, application Japan, Feb. 14, 1997, 9-47366

Int. Cl. G01C *3/00;3/08;* **H04N** *7/00;7/18*

U.S. Cl. 356—3.03 **18 Claims**



1. An outdoor range finder for finding a distance to an object, comprising:

a laser emitting means that emits a pulse laser beam to an object to be measured;

an image reading means that takes in a plurality of images of the object synchronously with emission periods and off periods of the laser beam;

a means for producing a plurality of differential images from differences between ones of the images read during the emission periods and other ones of the images read during the off periods;

a means that detects minimum value data of corresponding pixels of said plurality of differential images;

a means that determines a binary threshold from the minimum value of the differential images;

a means that makes a binary data from the minimum value data of the differential images, and detects a position where the laser beam is received; and

means for determining a distance between said laser emitting means and said object based on the position where the laser beam is received.

US 6,331,888 B1
METHOD AND APPARATUS FOR SURFACE INSPECTION

Hisashi Isozaki, Tokyo, Japan, assignor to Kabushiki Kaisha Topcon, Tokyo, Japan

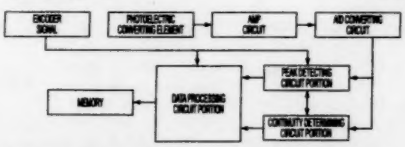
Continuation of application No. 09/196,739, filed on Nov. 20, 1998, now Pat. No. 6,108,078. This application Jul. 10, 2000, Appl. No. 613,464.

Claims priority, application Japan, Nov. 21, 1997, 9-336566; Nov. 21, 1997, 9-336572

This patent is subject to a terminal disclaimer.

Int. Cl. G01N *21/00*

U.S. Cl. 356—237.2 **6 Claims**



1. An apparatus for wafer surface inspection comprising:

a light source;

an irradiating optical system for throwing a light beam from said light source on the surface of an object of inspection;

a light receiving optical system for receiving a reflected light beam from said object of inspection;

a photosensing portion for sensing the reflected light beam received by said light receiving optical system;

a signal processing portion for processing the signal from said photosensing portion;

a displacement portion for providing relative displacement of the surface of the object of inspection and scanning the inspecting light beam from the light source to the surface of the object of inspection through the irradiating optical system; and

a peak detecting circuit for:

sensing a point where the scattered light signal by a foreign-matter exceeds a threshold signal or threshold signal level while the inspecting light beam is scanned in a predetermined direction as a start point;

sensing a point where the foreign-matter scattered signal thereafter falls below the threshold signal or threshold signal level as an end point; and

sensing a point where the foreign-matter scattered signal was at its maximum level between the start point and the end point as a peak; and

wherein the signal processing portion evaluates sensed data to determine existence of foreign matter on the surface of the object of inspection.

US 6,331,889 B1
METHOD FOR OPTICALLY INSPECTING AN INTERMEDIATE LAYER OF AN AT-LEAST THREE-LAYER, LARGE-AREA ARTICLE

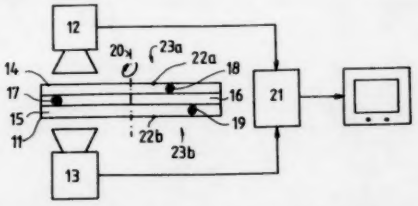
Ansgar Kaupp, Ahrensburg, Germany, assignor to Basler AG, Ahrensburg, Germany

Filed Jun. 21, 2000, Appl. No. 598,728

Claims priority, application Germany, Jun. 25, 1999, 199 29 118

Int. Cl. G01N *21/00*

U.S. Cl. 356—239.1 **20 Claims**



1. A method for inspecting a large-area article having at least two opposing outer layers (**14**, **15**) which are at least partially transparent, and at least one intermediate layer (**16**) located between the outer layers, comprising the steps of:

optical sensing of opposing sides (**23***a*, **23***b*) of the article (**11**) with at least two optical receivers (**12**, **13**);

allocating data of recorded image points of one of said optical receivers (**12**) to data of recorded image points of the other of said optical receivers (**13**) so opposing points (**22***a*, **22***b*) of the article are allocated to each other for evaluation; and

identifying a potential error (**17**) in the intermediate layer (**16**) when said data of said opposing image points indicate an error in the case of both optical receivers.

US 6,331,890 B1

THICKNESS MEASURING APPARATUS, SUBSTRATE PROCESSING METHOD, AND SUBSTRATE PROCESSING APPARATUS

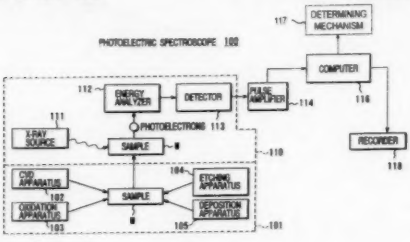
Yoshinori Marumo, Chino, and Teruyuki Hayashi, Kofu, both of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Continuation of application No. PCT/JP99/00229, filed on Apr. 28, 1999. This application Dec. 29, 1999, Appl. No. 474,126.

Claims priority, application Japan, May 1, 1998, 10-122231

Int. Cl. G01J *4/00*

U.S. Cl. 356—369 **18 Claims**



1. A film thickness measuring apparatus comprising:

a housing which substantially shuts off an internal region thereof from outside air;

an introduction stage on which a cassette is mounted, the cassette containing a plurality of substrates which have thin films formed thereon;

a measurement stage which is arranged inside the housing and on which the substrate is placed for measuring the thickness of the thin film;

a conveyance mechanism, arranged inside the housing, for moving the substrates between the inside of the cassette and measurement stage;

a film thickness measuring mechanism, arranged inside the housing, for emitting a measurement wave to the thin film on the substrate of the measurement stage, detecting at least one of a reflection wave and an emissive wafer from the thin film, and measuring the thickness of the thin film in a non-contact manner on the basis of detection information; and a filter mechanism, arranged in the housing, for capturing and removing gaseous organic matter from the outside air and supplying the outside air to at least the measurement stage,

wherein said film thickness measuring mechanism includes an elliptical polarization analyzing apparatus that comprises: a light source; a polarizer for changing light emitted from the light source into linearly polarized light; a 1/4 wavelength plate for changing the linearly polarized light into elliptically polarized and causing this elliptically polarized light to be incident on a thin film obliquely; a detection section for detecting first elliptically polarized light reflected by a surface of the thin film and second elliptically polarized light reflected by a bottom face of the thin film; a reading mechanism for reading a phase difference angle and an amplitude ratio angle with respect to the first and second elliptically polarized lights detected by the detection section; and a determining mechanism for determining a film thickness on the basis of the read phase difference angle and amplitude ratio angle.

US 6,331,891 B1

APPARATUS AND METHOD FOR ASSEMBLING SEMICONDUCTOR DEVICE AND SEMICONDUCTOR DEVICE THUS FABRICATED

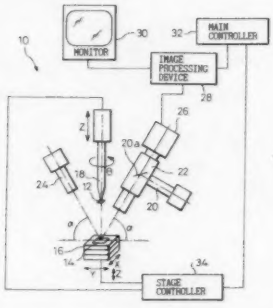
Yutaka Nakamura; Tetsuo Koezuka; Hitoshi Komoriya, and Takao Hirahara, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of application No. 09/161,487, filed on Sep. 28, 1998, now abandoned. This application Apr. 5, 1999, Appl. No. 285,675.

Claims priority, application Japan, Apr. 7, 1998, 10-94951

Int. Cl. G01B *11/00*

U.S. Cl. 356—401 **9 Claims**



1. An apparatus for assembling a semiconductor device, comprising:

a stage having a substrate support surface for supporting a substrate;

a support member for carrying a semiconductor element to a position on or near the substrate supported by said stage;

a microscope unit arranged inclined to the substrate support surface of said stage and having a coaxal illuminating unit, the microscope unit being inclined so that the microscope unit can observe an end surface or side surface of the semiconductor element rested on the substrate when said coaxial unit is used;

a counter illuminating unit arranged on the opposite side from said microscope unit with respect to a normal to the substrate support surface of said stage and inclined to the substrate support surface thereof;

a camera arranged at an image forming position of said microscope unit; and

an image processing unit connected to said camera.

US 6,331,892 B1

INTERFEROMETER FOR MONITORING WAVELENGTH IN AN OPTICAL BEAM

Evan D. H. Green, San Jose, Calif., assignor to New Focus, Inc., San Jose, Calif.

Provisional application No. 60/104,463, filed on Oct. 16, 1998. This application Oct. 15, 1999, Appl. No. 418,952.

Int. Cl. G01B *9/02*

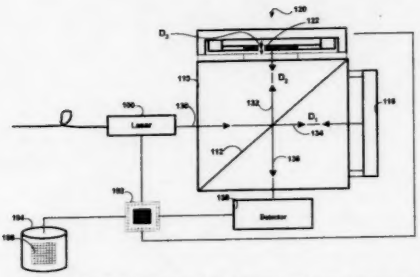
U.S. Cl. 356—451 **21 Claims**

1. An apparatus for monitoring wavelength in an optical beam generated by an optical source;

an interference element positioned in the path of the optical beam to generate a generally periodic fringe pattern;

detectors located within the generally periodic fringe pattern to generate signals corresponding to the intensities of the fringe pattern at a plurality of locations; and

logic coupled to said detectors for sampling two selected pairs of the signals generated by the detectors, for determining a ratio of the differences of the two selected pairs of the signals, and for comparing a current ratio with a prior ratio to detect a



variation in the wavelength of the optical beam generated by the optical source.

US 6,331,893 B1

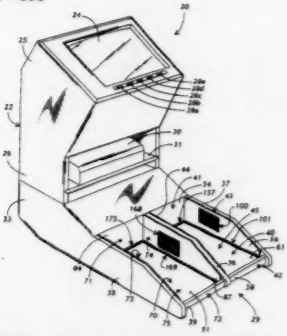
FOOT ANALYZER

Algie C. Brown, Atlanta; Carl T. Welty, Chamblee, both of Ga.; Henry G. Williams, Lexington, Va.; David M. Williams, Dunwoody, and James M. Dabbs, Duluth, both of Ga., assignors to Footmark, Inc., Atlanta, Ga.

Continuation of application No. 09/128,368, filed on Aug. 3, 1998, now abandoned, which is a continuation of application No. 08/792,407, filed on Feb. 3, 1997, now Pat. No. 5,790,256, which is a continuation of application No. 08/718,205, filed on Sep. 20, 1996, now abandoned, which is a continuation of application No. 08/221,707, filed on Apr. 1, 1994, now abandoned, which is a continuation-in-part of application No. 07/903,017, filed on Jun. 23, 1992, now Pat. No. 5,361,133. This application Jan. 16, 2001, Appl. No. 760,676.

Int. Cl. G01B *11/24*

U.S. Cl. 356—601 **1 Claim**



1. A method of measuring postural sway, the method comprising the steps of:

arranging a plurality of optical sensors to define a sensing area for receipt of a foot and a base portion of a leg attached to the foot;

operating the plurality of optical sensors to locate a position of a foot substantially randomly located within the sensing area;

generating optical data representing the position of the foot;

generating optical data representing the position of the base portion of a leg attached to the foot;

determining, based upon the optical data representing the position of the foot and the optical data representing the position of the base portion of the leg attached to the foot, information associated with the position of the base portion of the leg attached to the foot relative to the position of the foot; and,

outputting the determined information.

US 6,331,894 B1

PATTERN OUTPUT APPARATUS AND METHOD FOR CONVERTING FORM DATA AND INPUT DATA TO INTERMEDIATE DATA TO FORM AN OVERLAY PATTERN

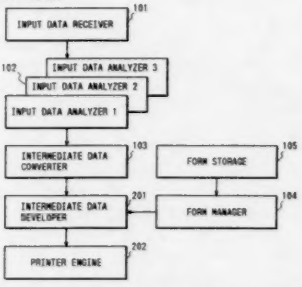
Masaaki Shimizu, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/361,655, filed on Dec. 22, 1994, now abandoned. This application Jul. 29, 1997, Appl. No. 901,284.

Claims priority, application Japan, Dec. 27, 1993, 5-331096

Int. Cl. G06F *15/00*

U.S. Cl. 358—1.13 **15 Claims**



1. A printing apparatus which generates print data based on input data described in a predetermined printer control language received from an external apparatus and controls a printer engine to print based on the generated print data, said printing apparatus comprising:

first conversion means for converting input image data described in a first printer control language into intermediate image data described in an intermediate language, the first printer control language including a control code for controlling said printing apparatus, the input image data including form designation information designating a form on which the input image data is to be overlayed;

second conversion means for converting input form data describing a plurality of forms, and which is described in a second printer control language into intermediate form data described in the intermediate language, the second printer control language being different in type from the first printer control language;

form memory means for storing, prior to input of the input image data of the first printer control language, the intermediate form data converted from the input form data by said second conversion means; and

control means for (a) reading the intermediate form data stored in said form memory means based on the form designation information included in the input image data and converting the read intermediate form data for the designated form into output form data, (b) converting the intermediate image data converted from the input image data by said first conversion means into output image data, (c) overlaying the output image data on the output form data to create a form overlay pattern and (d) controlling the printer engine to print the form overlay pattern.

US 6,331,895 B1

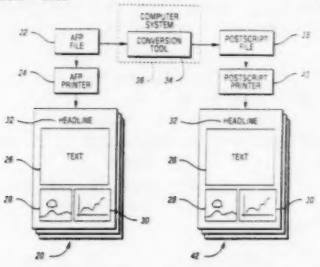
AFP TO POSTSCRIPT CONVERSION

Lars Patrick Erickson, Omaha, Nebr., and Tarry A. Hempel, Council Bluffs, Iowa, assignors to First Data Corporation, Hackensack, N.J.

Continuation of application No. 09/179,653, filed on Oct. 27, 1998, now Pat. No. 6,020,970. This application Jan. 31, 2000, Appl. No. 495,526.

Int. Cl. G06K *15/00*

U.S. Cl. 358—1.13 **18 Claims**



1. A method for converting a document represented in Advanced Function Presentation (AFP) format to a PostScript format comprising scanning an object in an AFP file and converting the scanned object to a PostScript format if the scanned object is determined to be appropriate.

US 6,331,896 B1

PRINTING SYSTEM AND METHOD FOR AVOIDING UNNECESSARILY REPETITIVE OPERATIONS WHILE PREPARING PRINT DATA

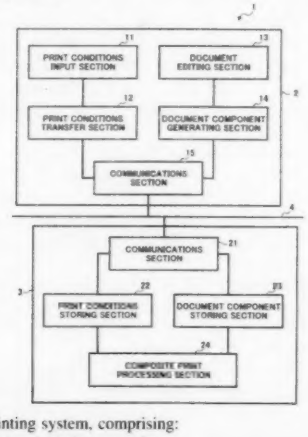
Tetsuya Morita, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 23, 1998, Appl. No. 102,555

Claims priority, application Japan, Jul. 10, 1997, 9-202295

Int. Cl. B41B *15/00*; **G06F** *15/00*

U.S. Cl. 358—1.18 **15 Claims**



1. A printing system, comprising:

a client terminal that comprises

a print conditions transfer mechanism configured to transport print conditions entered by an operator, and

a document component generating mechanism configured to divide a document entered by the operator into document blocks corresponding to different portions of the document, convert data in said document blocks into printable data, generate document components corresponding respectively to said document blocks, and transfer said document components; and

a printing terminal that comprises

a print conditions storing mechanism configured to receive and store said print conditions transferred from the print conditions transfer mechanism,

a document component storing mechanism configured to receive said document components transferred from the document component generating mechanism and sequentially store and transmit said document components, and

a composite print processing mechanism configured to receive said print conditions from said print conditions storing mechanism and said document components sequentially transmitted from said document component storing mechanism, generate image data according to said print conditions and corresponding to said document components, accumulate said generated image data, and print said document with the accumulated image data upon receiving a print start instruction,

wherein said document component generating mechanism is configured to modify, in response to a change to a part of said document, the contents of a corresponding document component from among said plurality of document components in accordance with the change and transfer the modified document component to said composite print processing mechanism via said document component storing mechanism, and

said composite print processing mechanism is configured to generate, upon receiving said modified document component, modified image data from said modified document component, replace with said modified image data a corresponding portion of the accumulated image data, and initiate printing of said document with said accumulated image data including the modified image data upon receiving a print start instruction.

US 6,331,897 B1

IMAGE PROCESSING METHOD AND APPARATUS IN WHICH A TABLE STORES BY A SCAN LINE UNIT MEMORY ADDRESSES AT EACH OF WHICH A FUNCTION IS STORED FOR DEVELOPING AN IMAGE FOR ONE LINE INTO A MEMORY

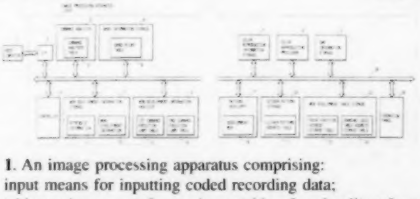
Shuichi Kumada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/098,053, filed on Jul. 28, 1993, now abandoned. This application Jan. 24, 1997, Appl. No. 788,574.

Claims priority, application Japan, Jul. 31, 1992, 4-205421; Jul. 31, 1992, 4-205542; Jul. 31, 1992, 4-205543

Int. Cl. G06F *15/00*

U.S. Cl. 358—1.9 **14 Claims**



1. An image processing apparatus comprising:

input means for inputting coded recording data;

table storing means for storing a table of a plurality of sets of memory addresses, wherein each set includes memory addresses of paint functions each corresponding to a respective one color element, each set corresponds to a respectively unique combination of types of paint processes for respective color elements, and each of the paint processes corresponds to a paint method and presence or absence of a corresponding color element;

determination means for determining a specified paint method;

judging means for judging presence or absence of each color element;

pointer control means for controlling a pointer for the table to point to one of the plurality of sets of memory addresses in accordance with the specified paint method and the presence or absence of each color element; and

developing means for developing an image of one scan line into a memory by executing each of the paint functions, stored at the addresses included in one of the plurality of sets pointed to by the pointer, for respective color elements.

US 6,331,898 B1

ENCODED DATA PRINTING APPARATUS AND METHOD FOR PRINTING A CODE AND AN IMAGE ON THE SAME MEDIUM

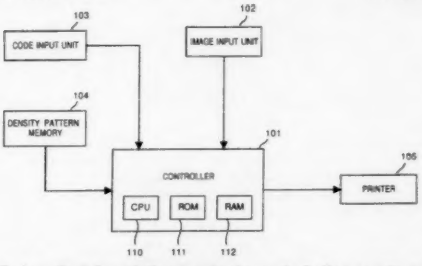
Katsuyuki Yokoi, Yokohama; Kazuhiro Nakata, Inagi; Atsushi Arai, Kawasaki, and Haruyuki Yanagi, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/197,871, filed on Feb. 17, 1994, now abandoned. This application May 27, 1997, Appl. No. 863,378.

Claims priority, application Japan, Feb. 17, 1993, 5-027939; Feb. 10, 1994, 6-016250

Int. Cl. B41B *15/00*

U.S. Cl. 358—1.9 **16 Claims**



5. A method for printing a color image including a code on a recording medium, comprising the steps of:

storing a plurality of dot patterns corresponding to a predetermined pixel density in a storage device, each of the dot patterns corresponding to code data;

calculating a number L of continuous pixels required to represent input code data;

obtaining the color of pixels in which the input code data is to be inlaid on the basis of the color which has the highest occurrences in at least L continuous pixels of an input color image;

determining the density of each pixel having an obtained color;

reading out a dot pattern corresponding to input code data from among the plurality of dot patterns having the density of the pixel determined in said determining step, and converting the colors of pixels of the color image into the dot patterns corresponding to the input code data; and

printing the color image including the dot patterns obtained in said converting step.

US 6,331,899 B1

METHOD AND APPARATUS FOR AUTOMATICALLY GENERATING SINGLE-CHANNEL CRITICAL COLOR TRANSFORMATIONS

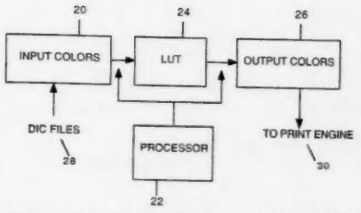
Ramin Samadani, Menlo Park, Calif., assignor to Electronics for Imaging, Inc., Foster City, Calif.

Filed Oct. 14, 1998, Appl. No. 172,377

Int. Cl. G02B *7/00*

U.S. Cl. 358—1.9 **28 Claims**

1. A method for generating single-channel color transformations, comprising the steps of:



selecting a set of colorant values in a simulated device color space that are critical to render accurately;

calculating the functions f_c, f_m, f_y, and f_k by finding output colorant values that minimize a colorimetric distance between input simulated colorant values and output colorant values, where said functions f_c, f_m, f_y, and f_k are single-channel color transformations given by

$$c_o = f_c(c_s)$$

$$m_o = f_m(m_s)$$

$$y_o = f_y(y_s)$$

$$k_o = f_k(k_s);$$

and populating lookup tables with values determined as a result of said calculating step.

US 6,331,900 B1

CONTROLLER FOR IMAGE FORMING APPARATUS

Takatsugu Kuno, Aichi-Ken, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 6, 1998, Appl. No. 186,894

Claims priority, application Japan, Nov. 13, 1997, 9-312138

Int. Cl. G06K *15/00*

U.S. Cl. 358—1.9 **27 Claims**

1. In an image forming apparatus which has a memory recall function and a serial number printing function, a controller for the image forming apparatus comprising:

a processor which automatically determines a starting serial number which is to be given to a first set of prints of a second print job in a case where a memory recall function and a serial number printing function are set, the starting serial number being sequential to the last serial number given to a first print job previously executed.

US 6,331,901 B1
CODED DATA OUTPUT APPARATUS

Hiroyuki Fukuda, Hachioji, and Shinzo Matsui, Yamanashi-ken, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

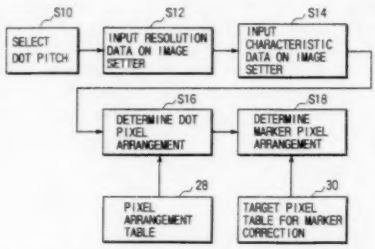
Continuation of application No. 08/819,909, filed on Mar. 18, 1997, now Pat. No. 6,014,501. This application Jul. 20, 1999, Appl. No. 357,413.

Claims priority, application Japan, Mar. 28, 1996, 8-073483

This patent is subject to a terminal disclaimer.

Int. Cl. G06K *15/02;19/06*

U.S. Cl. 358—1.9 **9 Claims**



1. A coded data output method used when image data of a dot is output from a computer to a recording apparatus for recording the dot code on a recording medium, the dot code comprising a plurality of dots which are arranged in correspondence to data which is reproduced based on arrangement of the dots when the dot code is optically read by a reading device,

wherein an arrangement of pixels constituting each of the dots and a dot pitch at which the dots are arranged are determined in accordance with resolution-related characteristics specific to the recording apparatus, to thereby prevent image distortion which is caused by re-sampling; and

wherein the arrangement of the pixels is determined by determining the number of the pixels in such a manner as to satisfy a condition wherein a diameter of said each dot is smaller than a distance between centers of adjacent two of the dots.

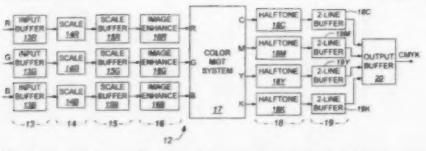
US 6,331,902 B1
SYSTEM AND METHOD FOR DIGITAL COLOR IMAGE PROCESSING

Bob Chih-Ming Lin, Newport Beach, Calif., assignor to Match Lab, Inc., Irvine, Calif.

Filed Oct. 14, 1999, Appl. No. 418,956

Int. Cl. B41B *1/00*

U.S. Cl. 358—1.9 **19 Claims**



16. A system for scaling a color input image defined by an array of source pixels to produce an array of output pixels, each of the source pixels having red, green, and blue color components, the system comprising:

(a) a memory for storing the source pixels;

(b) means for receiving a scale factor within a predetermined scale factor range of from not more than 10 percent to not less than 200 percent, the received scale factor being specifiable in 1 percent increments;

(c) means for selecting an interim scale factor from a numerically spaced set of predefined main scale factors, the main scale factors being spaced from a low end of the predetermined scale factor range, one of the predefined main scale factors being at a high end of the predetermined scale factor range, the predefined main scale factors including percentages of 25, 50, 75, 100, 125, 150, and 200, the interim scale factor being the predefined scale factor that is nearest the received scale factor in the direction of the high end of the predetermined scale factor range;

(d) means for determining, for the interim scale factor, a pixel transformation between a subset of the source pixels and a corresponding subset of intermediate pixel data as one or more scale functions of source pixel values;

(e) means for producing the intermediate pixel data from the source pixels using the interim scale factor and the one or more scale functions;

(f) means for interpolating the intermediate pixel data to produce a set of scaled pixels by dropping an evely spaced subset of the intermediate pixel data when the received scale factor is less than the interim scale factor;

(g) means for deriving a set of enhanced pixels from the set of scaled pixels, comprising:

(i) means for storing an enhancement value;

(ii) means for determining, for each of the scaled pixels, an enhanced pixel value being a value of the scaled pixel modified proportionally to the enhancement value and oppositely proportional to an average value of diagonally adjacent ones of the scaled pixels; and

(iii) means for storing the enhanced pixel values as a set of enhanced pixels having respective red, green and blue color components; and

(h) means for converting the enhanced pixels from RGB to CMYK, comprising:

(i) a 3-D lookup table containing CMYK values corresponding to a respective RGB values;

(ii) means for addressing the 3-D lookup table with high-order value portions of the enhanced pixels to obtain corresponding sets of intermediate CMYK values, the addressing means comprising a multiplexer having as inputs the high-order value portions of the RGB values, and further inputs being incremented counterparts of the high order value portions of the RGB values, the multiplexer being sequenced between combinations of the high order value portions or the incremented value portions of each of the RGB color components to obtain a plurality of addresses corresponding to each possible combination of the high order value portions each of the plurality of addresses producing one of the sets of the intermediate CMYK values; and

(iii) means for interpolating the intermediate CMYK values using respective low-order value portions of the enhanced pixels, comprising an array of multipliers and adders for combining respective ones of the intermediate CMYK values of each set with the low-order value portions of the enhanced pixels selectively or negatively proportional for each of the RGB color components in different combinations according to member positions in the intermediate CMYK value sets.

US 6,331,903 B1
ORDER APPARATUS FOR PRINT INCLUDING RECORDING ORDER INFORMATION ON DEVELOPED FILM, A CARD READER FOR READING THE ORDER INFORMATION, OR CONFIRMING THE ORDER INFORMATION

Makoto Nakazawa; Masaaki Orimoto; Toru Nishimura, and Atsushi Itoh, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of application No. 08/369,930, filed on Jan. 6, 1995, now abandoned. This application Sep. 15, 1997, Appl. No. 929,798.

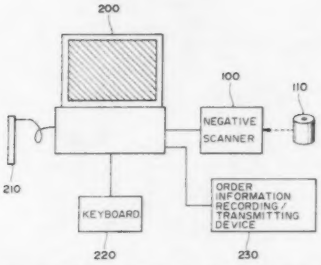
Claims priority, application Japan, Jan. 10, 1994, 6-000923; Mar. 22, 1994, 6-050529; Aug. 29, 1994, 6-203644

Int. Cl. H04N *1/04;* **G03F** *3/10;* **G03B** *27/32;27/52*

U.S. Cl. 358—487 **20 Claims**

1. An order apparatus for printing and re-printing user film orders and allowing the confirmation, amendment or deletion of the user film orders, comprising:

picture display means;



film picture reproducing means for displaying plural frames as an index picture, when setting a developed film housed in a film cartridge in a certain position, on said picture display means after scanning pictures from the developed film, said film cartridge having a single spool, wherein

said film picture reproducing means displays all frames in the developed film by changing or scrolling the index picture when the number of frames in the developed film is more than the number of frames in the index picture;

frame designation means for allowing users to designate frames to be printed on the index picture displayed by said picture display means;

order information input means for allowing users to input print order information by manual operation, said print order information including the number of prints corresponding to the frame designated by said frame designation means;

the developed film having magnetic record layers for each frame;

record means for recording on the magnetic record layers, for each frame provided on the developed film, order information for frames to be printed in accordance with said frame designation means and said print order information input means, wherein

said record means records print order information in the magnetic record layers for each frame; and

confirmation means for allowing users to confirm, amend or delete user print order information before printing frames.

US 6,331,904 B1

REFLECTION OPTICS REFERENCE BEAM TELESCOPE

Andrew J. Daiber, Palo Alto, and Mark E. McDonald, Mountain View, both of Calif., assignors to Siros Technologies, Inc., San Jose, Calif.

Continuation of application No. 09/136,032, filed on Aug. 19, 1998, now abandoned, which is a continuation-in-part of application No. 09/116,656, filed on Jul. 16, 1998, now Pat. No. 6,023,365, which is a continuation-in-part of application No. 09/116,647, filed on Jul. 16, 1998, now abandoned, which is a continuation-in-part of application No. 09/116,291, filed on Jul. 16, 1998, now Pat. No. 6,104,511. This application Jan. 4, 2000, Appl. No. 477,230.

Int. Cl. G03H *1/22;1/10;* **G02B** *5/32;17/00;* **G11C** *13/04*

U.S. Cl. 359—32 **33 Claims**

1. A holographic data storage and retrieval system comprising:

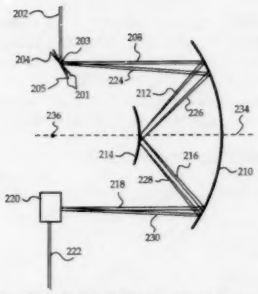
a) a holographic storage medium;

b) an optical system comprising a concave mirror M_1 and a convex mirror M_2, having their reflective surfaces opposing each other;

c) a reference beam R which propagates through said optical system and is incident on said storage medium, wherein said reference beam R comprises sequential portions:

a portion R(1) which is incident on said concave mirror M_1;

a portion R(2) which is reflected by said concave mirror M_1, and is incident on said convex mirror M_2;



a portion R(3) which is reflected by said convex mirror M_2 and is incident on said concave mirror M_1;

a portion R(4) which is reflected by said concave mirror M_1, and is incident on said storage medium; and

d) a signal beam which bypasses said optical system, and is incident on said storage medium, said signal beam interfering with said reference beam R in said storage medium.

US 6,331,905 B1

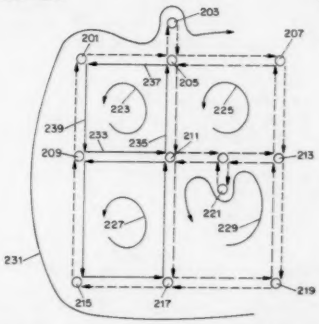
NETWORK SWITCH FAILURE RESTORATION

Georgios Ellinas, Astoria, and Thomas E. Stern, Riverdale, both of N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Apr. 1, 1999, Appl. No. 282,609

Int. Cl. H04B *10/00;10/08*

U.S. Cl. 359—110 **29 Claims**



1. A method for restoring a network comprising a plurality of nodes connected by links, wherein each of said nodes comprises a central switch connected to at least one working fiber, comprising the steps of:

providing at least one protection switch for making connections to respective ones of a plurality of protection fibers for at least one of said nodes, wherein said protection switch is capable of switching information from a working fiber to a respective one of said plurality of protection fibers;

providing mapping data indicative of which of said plurality of protection fibers should be switched to by said at least one protection switch in response to a failure of said central switch, wherein said mapping data is calculated responsive to identified cyclegroups for said network; and

if a failure of said central switch occurs, causing said at least one protection switch to switch said information from said working fiber to said protection fiber identified by said mapping data.

US 6,331,906 B1

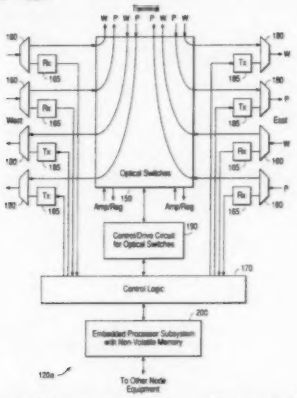
METHOD AND APPARATUS FOR OPERATION, PROTECTION AND RESTORATION OF HETEROGENEOUS OPTICAL COMMUNICATION NETWORKS

Rohit Sharma, Sunnyvale, and Larry R. McAdams, Belmont, both of Calif., assignors to ONI Systems Corp., San Jose, Calif.

Continuation of application No. 09/020,954, filed on Feb. 9, 1998, now Pat. No. 6,046,833, Provisional application No. 60/038,149, filed on Feb. 10, 1997. This application Sep. 29, 1999, Appl. No. 408,002.

Int. Cl. H04J *14/00*

U.S. Cl. 359—119 **14 Claims**



1. In an optical ring network having nodes coupled by bidirectional optical links wherein at least one bidirectional optical link between a given pair of nodes includes first and second fibers that carry upstream and downstream network traffic between the given pair of nodes, apparatus comprising, at each of the given pair of nodes:

control electronics operating to (a) generate supervisory messages for output onto said first and second fibers, (b) process incoming supervisory messages received from said first and second fibers, and (c) control at least one optical switching element associated with that node based on the supervisory messages received and the supervisory messages expected but not received;

first and second transmitters placing outgoing supervisory messages onto said first and second fibers;

first and second receivers receiving incoming supervisory messages from said first and second fibers; and

WDM couplers interfacing said first and second transmitters and said first and second receivers to said first and second fibers;

whereby supervisory messages are sent in both directions on each of said first and second fibers, notwithstanding the fact that each of said first and second fibers carries network traffic in only one direction.

US 6,331,907 B1

MULTI-WAVELENGTH LIGHT SOURCE AND DISCRETE-WAVELENGTH-VARIABLE LIGHT SOURCE

Tetsuya Miyazaki; Noboru Edagawa, and Shu Yamamoto, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

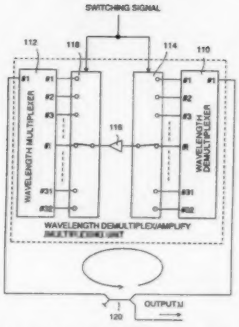
Division of application No. 08/932,222, filed on Sep. 17, 1997. This application Jul. 26, 2000, Appl. No. 625,386.

Claims priority, application Japan, Sep. 17, 1996, 8-244383

Int. Cl. H04J *14/02*

U.S. Cl. 359—127 **14 Claims**

1. A discrete-wavelength-variable light source for selectively supplying at least one discrete wavelength in output laser light, comprising:



a selectively demultiplex/amplifier for selectively demultiplexing at least one predetermined wavelength from an input light and optically amplifying them, wherein the selective demultiplex/amplifier comprises a wavelength demultiplexer to demultiplexer the input light into a plurality of predetermined wavelengths, a first optical switch to select one of said wavelengths from said wavelength demultiplexer, an optical amplifier to amplify an optical output of the first optical switch, a wavelength multiplexer to wavelength-multiples a plurality of optical inputs, and a second optical switch to supply an optical output of the optical amplifier to an input of said wavelength multiplexer corresponding to the wavelength selected by the first optical switch; and

an optical splitter to split part of an optical output from the selective demultiplex/amplifier to transfer it to the selective demultiplex/amplifier and to externally supply a remainder of the optical output from said selective demultiplex/amplifier.

US 6,331,908 B1

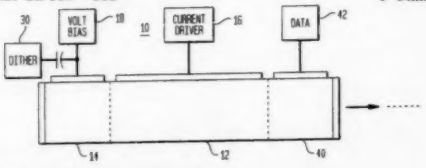
OPTICAL SYSTEM FOR REDUCED SBS

Laura Ellen Adams, Basking Ridge; Clyde George Bethea, Franklin, both of N.J.; Lars Erik Eskildsen, Lyngby, Denmark; Gerald Nykolak, Long Beach Long Island, N.Y.; Rossevelt People, Plainfield, and Tawee Tanbun-Ek, Califon, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 22, 1999, Appl. No. 444,470

Int. Cl. H04B *10/04;10/12;* **H05I** *3/19;3/08*

U.S. Cl. 359—188 **3 Claims**



1. An optical system comprising

an optical fiber which tends to generate SBS in response to a laser signal,

an integrated optical circuit for generating a modulated, tunable semiconductor laser output signal coupled to said fiber, said circuit including, arranged in tandem, a tunable laser source for generating said output signal and a semiconductor modulator for impressing information on said output signal, said laser source including a cavity resonator formed by a DFB gain section for generating said laser signal at a given center wavelength and a composite reflector for altering the phase of the laser signal within said resonator, a tuning source for applying a tuning voltage to said composite reflector to alter said phase and hence the center wavelength of said output signal, and a dither source for applying to said composite

reflector a dither signal for broadening the spectrum of said output signal, thereby to increase the threshold for SBS in said fiber.

US 6,331,909 B1

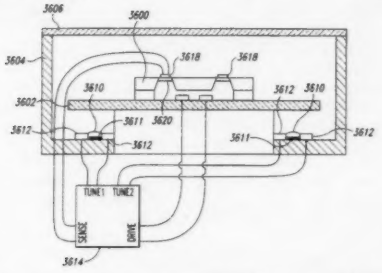
FREQUENCY TUNABLE RESONANT SCANNER

John C. Dunfield, Woodinville, Wash., assignor to Microvision, Inc., Bothell, Wash.

Filed Aug. 5, 1999, Appl. No. 370,791

Int. Cl. G02B *26/08*

U.S. Cl. 359—199 **15 Claims**



1. A microelectromechanical resonant device, comprising:

a base;

a movable body coupled to the base for resonant motion relative to the base about a pivot axis;

an enclosure surrounding the movable body and at least a portion of the base;

a flexible member extending between the movable body and the base, the flexible member including a gas absorbing material, the gas absorbing material having material properties responsive to a partial pressure of a selected gas within the enclosure wherein the responsive material properties define a resonant frequency of the resonant motion; and

an electrically activated pressure controller, coupled to the enclosure and responsive to an electrical signal to increase or decrease the partial pressure of the gas.

US 6,331,910 B1

ARRANGEMENT AND METHOD FOR ELECTRICALLY CONTROLLING THE INTENSITY OF UNPOLARIZED LIGHT

Wolfgang Dultz, Frankfurt am Main, Germany; Leonid Beresnev; Galina Patrusheva, both of Columbia, Md., and Wolfgang Haase, Reinheim, Germany, assignors to Deutsche Telekom AG, Bonn, Germany

PCT No. PCT/DE98/02017, § 371 Date Jan. 19, 2000, § 102(e) Date Jan. 19, 2000, PCT Pub. No. WO99/04310, PCT Pub. Date Jan. 28, 1999

PCT Filed Jul. 15, 1998, Appl. No. 463,108

Claims priority, application Germany, Jul. 19, 1997, 197 31 135; Jul. 19, 1997, 197 31 134

Int. Cl. G02F *1/03*

U.S. Cl. 359—246 **50 Claims**

1. An arrangement for achieving an electrical control of an intensity of a non-polarized light, comprising:

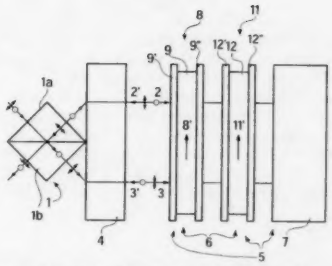
a beam splitter for splitting a supplied light into a plurality of polarized light bundles that are orthogonal with respect to each other;

a downstream first reflecting device for parallelizing each one of the plurality of polarized light bundles;

a plurality of transparent electrodes;

a plurality of electrically controllable liquid crystal cells that are connected behind one another, wherein:

the plurality of electrically controllable liquid crystal cells are embedded



between the plurality of transparent electrodes, and

the plurality of electrically controllable liquid crystal cells alter a polarization of the plurality of polarized light bundles as a function of a control voltage that is applied to the plurality of transparent electrodes; and

at least one downstream second reflecting device arranged to reflect the plurality of polarized light bundles in an opposite direction such that the plurality of polarized light bundles pass through the plurality of electrically controllable liquid crystal cells a second time and subsequently are at least partially reunited by the first reflecting device and the beam splitter depending on the polarization and are fed to at least one output location where the electrically controlled light can be extracted.

US 6,331,911 B1

LARGE APERTURE OPTICAL IMAGE SHUTTER

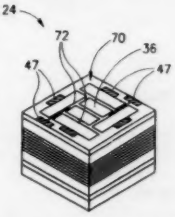
Amnon Manassen; Giora Yahav, and Gavriel J. Iddan, all of Haifa, Israel, assignors to 3DV Systems Ltd., Yokneam, Israel

PCT No. PCT/IL98/00060, § 371 Date Aug. 4, 2000, § 102(e) Date Aug. 4, 2000, PCT Pub. No. WO99/40478, PCT Pub. Date Aug. 12, 1999

PCT Filed Feb. 8, 1998, Appl. No. 601,805

Int. Cl. G02F *1/03;* **H01L** *29/06*

U.S. Cl. 359—260 **34 Claims**



1. An optical image shutter for modulating light, having a shutter aperture defined by an aperture area on a plane, wherein said image shutter modulates light incident on said aperture area, comprising:

a multiplicity of thin layers of alternating narrow and wide gap semiconductor material stacked to form an MQW structure; and

electrodes located on at least two semiconductor planar end surfaces of the image shutter, and associated driving circuitry configured so that a voltage difference applied between said electrodes produces an electric field that is temporally and spatially substantially uniform in the volume of the MQW structure,

wherein said aperture area is greater than 4 square mm.

US 6,331,912 B1
OPTICAL CIRCULATOR

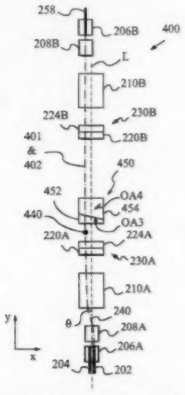
Vincent Au-Yeung, Los Altos; Qing-Dong Guo, and Xing Long Wang, both of Sunnyvale, all of Calif., assignors to U.S.A. Kaifa Technology, Inc., Sunnyvale, Calif.

Continuation-in-part of application No. 09/025,526, filed on Feb. 18, 1998, now Pat. No. 5,930,039, which is a continuation-in-part of application No. 08/986,064, filed on Dec. 8, 1997, now Pat. No. 5,909,310. This application Feb. 19, 1999, Appl. No. 252,770.

This patent is subject to a terminal disclaimer.

Int. Cl. G02B *5/30*

U.S. Cl. 359—484 **30 Claims**



21. An optical circulator for coupling a first light sending port, a second light sending and receiving port, and a third receiving port, said circulator having a longitudinal axis along which there is located a plurality of elements comprising:

a) a first beam splitter and combiner for receiving a beam of light from said first port, and for separating said beam of light received from said first port into first and second orthogonally polarized sub-beams, and being capable of combining mutually orthogonal polarizations of light;

b) a first polarization rotator for rendering mutually parallel polarizations orthogonal and mutually orthogonal polarizations parallel;

c) a light bending device comprising two birefringent elements, each of said elements disposed serially to receive both of said first and second sub-beams; and for bending said sub-beams at an angle dependent upon a direction of polarization of said sub-beams;

d) a second beam splitter and combiner for separating a beam of light received from said second port into third and fourth orthogonally polarized sub-beams, and being capable of combining mutually orthogonal polarizations of light;

wherein said elements along said longitudinal axis are so located as to be in a sequence which couples said first port, said second port, and said third port such that light guided into said first port will be transmitted to said second port, and light guided into said second port will be transmitted to said third port but not to said first port.

US 6,331,913 B1
OPTICAL POLARIZATION BEAM COMBINER/ SPLITTER

Yonglin Huang, and Ping Xie, both of San Jose, Calif., assignors to New Focus, Inc., San Jose, Calif.

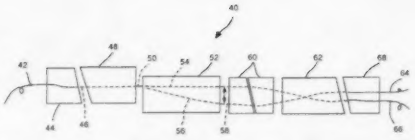
Division of application No. 09/365,680, filed on Aug. 2, 1999. This application Oct. 30, 2000, Appl. No. 702,538.

Int. Cl. G02B *5/30*

U.S. Cl. 359—497 **5 Claims**

1. An optical polarizing beam splitter comprising:

a first optical fiber having an end defining a first optical axis;



a second optical fiber having an end defining a second optical axis;

a third optical fiber having an end defining a third optical axis parallel to and spaced apart from said second optical axis;

a collimating lens disposed along said first optical axis positioned to form a collimated optical beam from said first optical fiber;

a birefringent walk-off crystal disposed in a path of said collimated optical beam, said crystal oriented such that and having a thickness between first and second faces thereof selected such that a first component of said optical beam having a first polarization transits said crystal along a first path and a second component of said optical beam having a second polarization orthogonal to that of said first polarization transits said crystal along a second path disposed at a walkoff angle with respect to said first path and said first and second paths exit said second face of said crystal as substantially parallel first and second paths;

a Wollaston prism disposed along said substantially parallel first and second paths and oriented such as to bend said substantially parallel first and second paths towards each other to form converging first and second paths;

a focussing lens disposed along said converging first and second paths and positioned such that a first component optical beam travelling along said first converging path is directed into said end of said second optical fiber along said second optical axis and a second component optical beam travelling along said second converging path is directed into said end of said third optical fiber along said third optical axis.

US 6,331,914 B1
OPTICAL INTERFERENCE COATING CAPABLE OF WITHSTANDING SEVERE TEMPERATURE ENVIRONMENTS

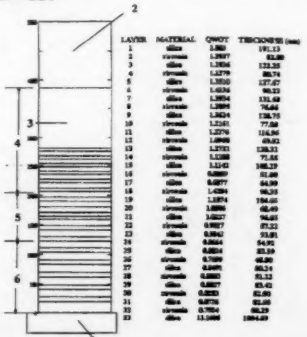
Byron A. Wood, II, and William H. Howard, both of Santa Rosa, Calif., assignors to Deposition Sciences, Inc., Santa Rosa, Calif.

Division of application No. 08/753,574, filed on Nov. 26, 1996, now Pat. No. 5,923,471. This application Jun. 14, 1999, Appl. No. 332,092.

This patent is subject to a terminal disclaimer.

Int. Cl. G02B *1/10;5/28;5/08;* **F21V** *9/00*

U.S. Cl. 359—584 **4 Claims**



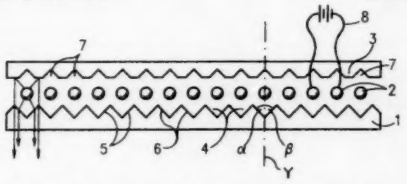
1. A method of making an interference coating comprising the steps:

(a) forming a layer of a first material;
(b) forming a layer of second material;
(c) repeating steps (a) and (b) one or more times; and
(d) forming a final layer of the first material;
wherein the thickness of the final layer is at least one half of the cumulative thickness of all of the other layers of the first material.

US 6,331,915 B1
LIGHTING ELEMENT INCLUDING LIGHT EMITTING DIODES, MICROPRISM SHEET, REFLECTOR, AND DIFFUSING AGENT

Kenneth J. Myers, 50 S. Buckhout St., Irvington, N.Y. 10533, assignor to Kenneth J. Myers, and Edward Greenberg, both of Irvington, N.Y.

Filed Jun. 13, 2000, Appl. No. 592,913
Int. Cl. G02B *5/02;* **F21V** *8/00*
U.S. Cl. 359—599 **10 Claims**

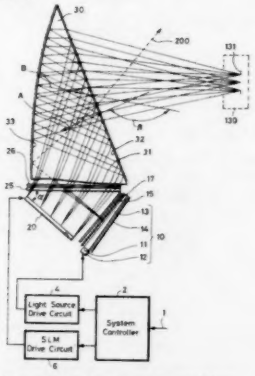


1. A lighting element comprising a microprism sheet including a plurality of grooves having a v-shaped cross-section, a plurality of discrete light sources positioned in each of at least two of said grooves, and a reflective structure for reflecting light from the discrete light sources back towards said microprism sheet.

US 6,331,916 B1
VIRTUAL IMAGE OPTICAL SYSTEM

Hiroshi Mukawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 13, 2000, Appl. No. 615,478
Claims priority, application Japan, Jul. 14, 1999, 11-200724
Int. Cl. G02B *27/14*
U.S. Cl. 359—630 **155 Claims**

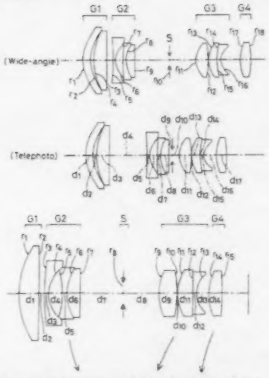


1. A virtual image optical system comprising:
a reflective spatial light modulator;
an illuminating light source device for providing said reflective spatial light modulator with an illuminating ray;
a light source optical system for leading an illuminating ray fed from said illuminating light source device to said reflective spatial light modulator, said light source optical system including a beam splitter; and
eyepiece optics for leading an image ray fed from said reflective spatial light modulator to a viewing area, said eyepiece optics including a beam splitter and a reflector,
wherein an angle formed by a plane normal vector at a point where a chief ray passing through a center of said reflective spatial light modulator intersects the beam splitter of said eyepiece optics and a plane normal vector at a point where the chief ray intersects said reflector is in the range of 136 degrees to 179 degrees, when a side of ray reflection on each surface of the beam splitter and the reflector of said eyepiece optics is taken as a positive direction of a vector.

US 6,331,917 B1
ZOOM LENS SYSTEM

Atsujiro Ishii, and Yuji Miyauchi, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of application No. 09/172,263, filed on Oct. 14, 1998, now Pat. No. 6,185,048. This application Dec. 23, 1999, Appl. No. 471,804.
Claims priority, application Japan, Oct. 14, 1997, 9-280758; Jan. 9, 1998, 10-003215; Aug. 31, 1998, 10-244643; Nov. 8, 1999, 11-316827
Int. Cl. G02B *15/14*
U.S. Cl. 359—687 **45 Claims**



1. A zoom lens system comprising in order from an object side of said zoom lens system:
a first lens group having positive refracting power,
a second lens group that has negative refracting power and moves from an object side to an image plane side of said system during zooming from a wide-angle end to a telephoto end of said system,
a third lens group having positive refracting power, and
a fourth lens group that has positive refracting power and is movable during zooming, wherein:
said first lens group comprises two lenses, a negative lens and a positive lens, or one positive lens alone,
said third lens group comprises three lenses, a positive lens, a positive lens and a negative lens, or two lenses, a positive lens and a negative lens, and
said third lens group has at least one aspherical surface therein,
provided that said zoom lens system satisfies the following condition (10):

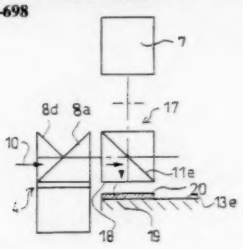
$$2.5 \text{ mm} < f_{B(min)} < 4.8 \text{ mm} \quad (10)$$

where $f_{B(min)}$ is a value obtained when a length, as calculated on an air basis, from a final surface of a powered lens in said zoom lens system to an image plane is minimized in an overall zooming zone.

US 6,331,918 B1
LIGHT INTERCEPTION STRUCTURE FOR AN AUTOMATIC FOCUS DETECTION SURVEYING INSTRUMENT

Masami Shirai, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1999, Appl. No. 337,351
Claims priority, application Japan, Jun. 23, 1998, 10-176348
Int. Cl. G02B *15/14*
U.S. Cl. 359—698 **17 Claims**



15. A light interception structure for an automatic focus detection surveying instrument comprising:

a telescopic optical system having an objective optical system and an ocular optical system;

a beam splitting optical element which splits object light transmitted through the objective optical system from the telescopic optical system, said beam splitting optical system including a splitting surface;

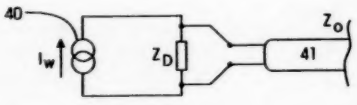
a focus detection device having a light receiving device for receiving the object light split by the beam splitting optical system; and

an inner surface of a housing of the automatic focus detection surveying instrument that is adjacent to a surface of said beam splitting optical element onto which light entering said telescopic optical system through said ocular optical system is first made incident after passing through or being reflected by said splitting surface is one of provided with an anti-reflection treatment and positioned so as to reflect incident light away from said splitting surface.

US 6,331,919 B1
WRITE HEAD IMPEDANCE TERMINATION IN MAGNETIC RECORDING

Klaassen Berend Klaassen, and Jacobus Cornelis Leonardus Van Peppen, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1999, Appl. No. 369,320
Int. Cl. G11B *5/09;5/02*
U.S. Cl. 360—46 **22 Claims**



1. A magnetic recording circuit, comprising:

a write driver output stage having a write signal output;

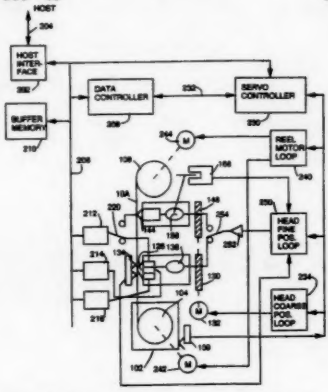
a magnetic write head having a write signal input; and

an interconnect circuit having an input, an output and a selected characteristic impedance Z_O, the input of the interconnect circuit being coupled to the write signal output of the write driver output stage, the output of the interconnect circuit being coupled to the write signal input of the write head, and the interconnect circuit being source-terminated and including a source-terminating circuit so that an output impedance Z_D formed by the write driver output stage and the source-terminating circuit is substantially equal to the selected characteristic impedance Z_0 of the interconnect circuit.

US 6,331,920 B1
BACKWARD COMPATIBLE HEAD AND HEAD POSITIONING ASSEMBLY FOR A LINEAR DIGITAL TAPE DRIVE

Laurence J. Albrecht, Louisville, Colo., and George A. Saliba, Northboro, Mass., assignors to Quantum Corporation, Milpitas, Calif.

Continuation of application No. 09/149,733, filed on Sep. 8, 1998, now Pat. No. 6,188,532. This application Oct. 10, 2000, Appl. No. 685,418.
Int. Cl. G11B *15/12*
U.S. Cl. 360—63 **28 Claims**



19. A tape unit for reading data recorded on (i) a first cartridge having a storage tape recorded in accordance with a first track layout and (ii) a second cartridge having a storage tape recorded in accordance with a second track layout, the tape unit comprising:

a first head assembly that reads data in accordance with the first track layout;

a second head assembly that reads data in accordance with the second track layout;

a base;

a plurality of tape guides that guide the storage tape along a tape path;

an electromechanical, first positioning mechanism that positions the first head assembly near the tape path; and

an electromechanical, second positioning mechanism that positions the second head assembly near the tape path, the second positioning mechanism moving the second head assembly relative to the first head assembly.

US 6,331,921 B1
MAGNETO-RESISTIVE HEAD READ AMPLIFIER

Bradley K. Davis; Robert M. Thelen, both of Ft. Collins, Colo., and Michael C. Allyn, Boise, Id., assignors to Agilent Technologies, Inc, Palo Alto, Calif.

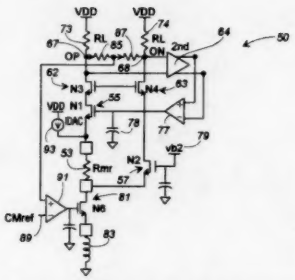
Filed Jul. 6, 1998, Appl. No. 110,219
Int. Cl. G11B *5/02;5/09;5/03*
U.S. Cl. 360—67 **22 Claims**

1. A head read amplifier circuit of a magnetic read/write system, the head read amplifier circuit comprising:

a magneto resistor having a first terminal and a second terminal, the magneto resistor sensing changes in magnetic flux on a surface of a magnetic storage medium and producing changes in the resistance of the magneto resistor in response to the changes in magnetic flux;

a bias-current source for generating a bias current for the magneto resistor, the bias-current source having an output terminal coupled to the first terminal of the magneto resistor for passing the bias current through the magneto resistor;

a differential feedback circuit coupled to first and second output terminals of the head read amplifier circuit, the differential feedback circuit receiving a differential output voltage gener-



ated at the output terminals of the head read amplifier circuit and nulling the differential output voltage, the output of the differential feedback circuit being coupled to the first terminal of the magneto resistor;

a common mode feedback circuit, the common mode feedback circuit setting a minimum bias current for the magneto resistor, the common mode feedback circuit being coupled to the second terminal of the magneto resistor via a current-source transistor, the common mode feedback circuit comprising a first cascode circuit and a second cascode circuit, the first and second cascode circuits each comprising a plurality of transistors connected in series, the first cascode circuit having a first terminal coupled to the first output terminal of the head read amplifier circuit and a second terminal coupled to the first terminal of the magneto resistor, the second cascode circuit having a first terminal coupled to the second output terminal of the head read amplifier circuit and a second terminal coupled to the second terminal of the magneto resistor; and

a current drain comprising the current-source transistor and an inductor, the current-source transistor having a first terminal, the common mode feedback circuit being coupled to the first terminal of the current-source transistor, the current-source transistor having a second terminal coupled to the second terminal of the magneto resistor, the current-source transistor having a third terminal coupled to a first terminal of the inductor, the inductor having a second terminal coupled to ground, wherein the impedance of the inductor reduces any noise generated by the current-source transistor.

US 6,331,922 B2

MAGNETIC TAPE CARTRIDGE WITH ELASTIC MEMBER FOR REMOVABLY HOLDING LEADER PIN

Kiyoo Morita; Daisuke Takahashi; Hideaki Shiga; Yusuke Ishihara, and Seiji Tsuyuki, all of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa-Ken, Japan

Division of application No. 09/220,576, filed on Dec. 23, 1998, now Pat. No. 6,236,539. This application Dec. 20, 2000, Appl. No. 739,684.

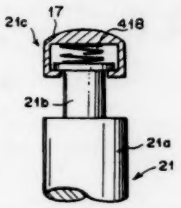
Claims priority, application Japan, Dec. 24, 1997, 9-354644; Apr. 28, 1998, 10-118660

Int. Cl. G11B *23/037*

U.S. Cl. 360—132 **7 Claims**

1. A magnetic tape cartridge comprising a cartridge casing defining upper and lower inner surfaces, and a single reel around which a magnetic tape with a leader pin fixed to the leading end thereof is wound and which is contained in the cartridge casing for rotation, the leader pin including an upper end portion having an upper end face and a lower end portion having a lower end face,

wherein the leader pin further includes an elastic member, which urges the upper and lower end faces of the leader pin to resiliently abut against the upper and lower inner surfaces of the cartridge casing, mounted on at least one of the upper and lower end portions of the leader pin, and wherein the leader



pin is removably held in the cartridge casing under the elasticity of the elastic member.

US 6,331,923 B1

MICROACTUATED DISK DRIVE SUSPENSION WITH HEIGHTENED STROKE SENSITIVITY

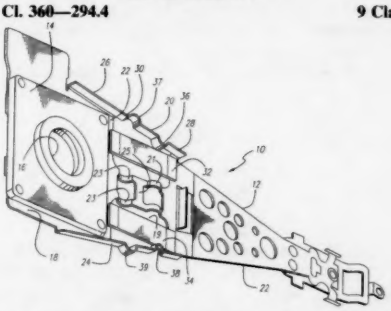
Shijin Mei, Temecula, Calif., assignor to Magnecomp Corporation, Temecula, Calif.

Continuation of application No. 09/439,599, filed on Nov. 12, 1999, now Pat. No. 6,239,953, Provisional application No. 60/159,907, filed on Oct. 15, 1999. This application Feb. 6, 2001, Appl. No. 778,271.

This patent is subject to a terminal disclaimer.

Int. Cl. G11B *5/56*

U.S. Cl. 360—294.4 **9 Claims**



1. A disk drive suspension comprising a load beam having a base portion, a spring portion extending in a plane and having right and left side rails extending normal to said spring portion and defining respectively opposed right and left spring elements that extend laterally of said load beam, and a beam portion adapted to carry a slider in operating proximity to a disk, a dimensionally variable piezoelectric crystal microactuator coupled to said base portion and said beam portion and across said spring portion in beam portion displaying relation to said base portion over a distance that is a function of an applied voltage to said microactuator and the resistance of said spring portion to changes in dimension, said left and right spring elements being longitudinally extended and multiply deflected at spaced locations along their longitudinal extent to form spaced proximate and distal local arcuate sections extending parallel to said spring portion plane and providing low resistance change in spring portion dimensions, said microactuator comprising right and left piezoelectric crystals inboard of said right and left spring elements, whereby said beam portion is displaced an increased distance at a given applied voltage.

US 6,331,924 B1

MAGNETORESISTIVE HEAD USING A MAGNETORESISTIVE ELEMENT AS A MAGNETIC DETECTOR

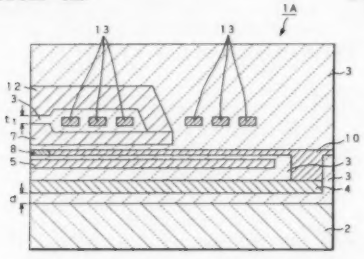
Akio Takada, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 2, 1999, Appl. No. 285,094

Claims priority, application Japan, Apr. 8, 1998, 10-096458

Int. Cl. G11B *5/127;5/39*

U.S. Cl. 360—323 **3 Claims**



1. A magnetoresistive head using a magnetoresistive element as a magnetic detector and having head elements formed on a substrate, comprising:

a capacitor connected in parallel to the magnetoresistive element;

the substrate being made of a conductive material to serve as one of electrodes forming the capacitor;

a conductive layer formed on the substrate via an insulative layer;

the conductive layer to serve as a second of electrodes forming the capacitor; and

a first magnetic shield layer formed on the conductive layer via the insulative layer;

the magnetoresistive element being formed on the first magnetic magnetic shield via the insulative layer.

US 6,331,925 B1

TWO STAGE RECIPROCATING COMPRESSORS AND ASSOCIATED HVAC SYSTEMS AND METHODS

Joseph F. Loprete; Michael R Young; John W Tolbert, Jr., all of Bristol, Tenn.; David T Monk, Bristol, Va.; Philip C Wagner, Bristol, Tenn.; Joe T Hill, Bristol, Va.; Larry Pippin, Bristol, Va., and Robert B. Peters, Bristol, Va., assignors to Bristol Compressors, Inc., Bristol, Va.

Division of application No. 09/133,841, filed on Aug. 13, 1998, now Pat. No. 6,132,177, which is a continuation-in-part of application No. 08/911,481, filed on Aug. 14, 1997, now Pat. No. 6,092,993. This application Jun. 29, 2000, Appl. No. 605,432.

This patent is subject to a terminal disclaimer.

Int. Cl. H02H *7/00*

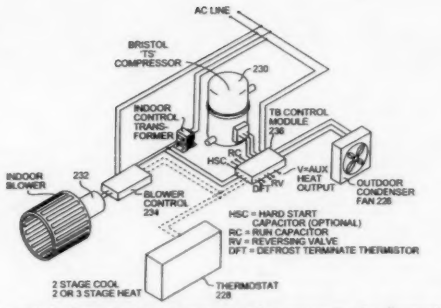
U.S. Cl. 361—22 **13 Claims**

1. A two stage compressor comprising:

a block having a first cylinder and a second cylinder, each of the first and second cylinders having an associated compression chamber and piston;

a crankshaft operatively connected to said pistons in each of the first and second cylinders;

an induction motor with a start winding and a run winding, said motor operable to rotate the crankshaft in a forward direction and in a reverse direction; and



a switch for selectively operating the motor in the forward direction on the run windings and in the reverse direction on the start windings.

US 6,331,926 B1

PAIRED MULTI-LAYERED DIELECTRIC INDEPENDENT PASSIVE COMPONENT ARCHITECTURE RESULTING IN DIFFERENTIAL AND COMMON MODE FILTERING WITH SURGE PROTECTION IN ONE INTEGRATED PACKAGE

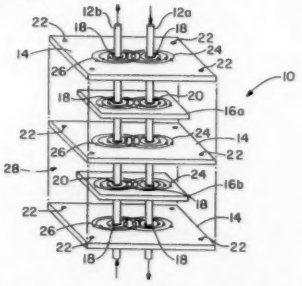
Anthony A. Anthony, 4511 W. Lake Rd., Erie, Pa. 16505

Continuation-in-part of application No. 09/008,769, filed on Jan. 19, 1998, now Pat. No. 6,097,581, which is a continuation-in-part of application No. 08/841,940, filed on Apr. 8, 1997, now Pat. No. 5,909,350. This application Dec. 13, 1999, Appl. No. 460,218.

This patent is subject to a terminal disclaimer.

Int. Cl. H02H *9/00*

U.S. Cl. 361—56 **4 Claims**



1. A line conditioning electronic component comprising:

at least three common ground conductive plates formed upon a support material having predetermined electrical properties;

first and second electrode plates, wherein said first electrode plate is formed upon a first support material having predetermined electrical properties and said second electrode plate is formed upon a second support material having predetermined electrical properties;

wherein said first electrode plate is stacked between at least two common ground conductive plates of said at least three common ground conductive plates and said second electrode plate is stacked between at least two common ground conductive plates of said at least three common ground conductive plates, wherein said first electrode plate and said second electrode plate sandwich at least one center common ground conductive plate of said at least three common ground conductive plates;

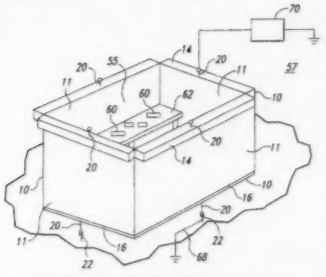
wherein said support material isolates said at least three common ground conductive plates, said first electrode plate and said second electrode plate preventing direct electrical connection between said plates; and

said at least three common ground conductive plates, said first electrode plate, said second electrode plate and said support material form a plurality of differential and common mode filters.

US 6,331,927 B1
PORTABLE RETRACTABLE STATIC ELECTRICITY SHIELD

Mark F. Overgaard, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Apr. 27, 1999, Appl. No. 299,620
Int. Cl. H02H *1/00*
U.S. Cl. 361—212 **60 Claims**

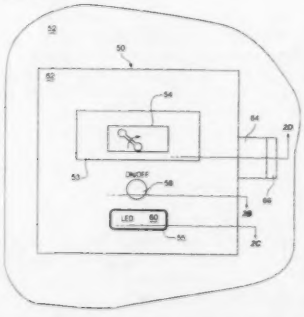


1. A static electricity shield, comprising:
a screen including a static electricity dissipative material;
a support structure adapted to mount said screen in a vertical direction;
at least one fastening structure for anchoring said screen; and
a structure for extending and retracting said screen.

US 6,331,928 B1
ESD-PROTECTED INTERFACE PANEL AND ASSOCIATED METHODS

Charles Grasso, and David Patrick Tieben, both of Louisville, Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed May 27, 1999, Appl. No. 318,550
Int. Cl. H05F *3/02*
U.S. Cl. 361—212 **11 Claims**

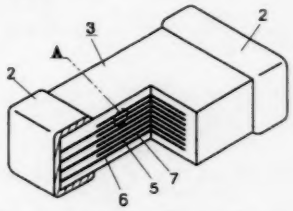


1. An ESD-protected interface panel, comprising:
a signal board comprising a first and second side; and
an ESD protection layer covering substantially all of the first side and extending around at least one edge of the signal board to form at least one contact covering at least part of the second side, wherein chassis ground is connected to the at least one contact, the ESD protection layer being deformable to human touch to activate an underlying switch coupled to the signal board.

US 6,331,929 B1
MULTI LAYER CERAMIC CAPACITOR

Atsushi Masuda, Tokyo, Japan, assignor to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Mar. 14, 2000, Appl. No. 524,360
Claims priority, application Japan, Mar. 19, 1999, 11-074785
Int. Cl. H01G *4/005*
U.S. Cl. 361—303 **5 Claims**

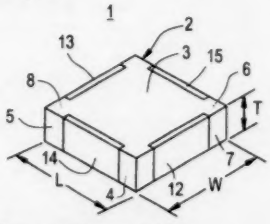


1. A multi-layer ceramic capacitor comprising:
a laminated body formed by ceramic layers and internal electrodes laminated on each other and
external electrodes provided at opposite end portions of the laminated body, wherein opposing internal electrodes are in electrical connection with opposite external electrodes, the internal electrodes are formed by conductor particles provided in end-to-end relationship along a boundary surface between adjacent ceramic layers and spaces are provided between some of the conductor particles.

US 6,331,930 B1
MULTILAYER CAPACITOR, ELECTRONIC DEVICE AND HIGH FREQUENCY CIRCUIT USING THE SAME

Yoichi Kuroda, Fukui; Yasuyuki Naito, Takefu; Haruo Hori, Sabae; Takanori Kondo, Sabae, and Kyoshin Asakura, Sabae, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Apr. 28, 2000, Appl. No. 561,369
Claims priority, application Japan, May 10, 1999, 11-127909; Mar. 23, 2000, 12-081428
Int. Cl. H01G *4/228*
U.S. Cl. 361—306.3 **28 Claims**



1. A multilayer capacitor comprising:
a capacitor body having a shape defined by a lengthwise dimension, a widthwise dimension, and a heightwise dimension, the capacitor body including first and second main surfaces that oppose each other and are individually defined by said lengthwise dimension and said widthwise dimension, first and second side surfaces that oppose each other and are individually defined by said lengthwise dimension and said heightwise dimension, and first and second end surfaces that oppose each other and are individually defined by said widthwise dimension and said heightwise dimension; wherein

said capacitor body includes:

a plurality of dielectric layers extending substantially parallel to said first and second main surfaces; and

at least one pair of first and second inner electrodes that oppose each other via said dielectric layers so as to define a capacitor unit;

said first inner electrode extends so as to connect said first and second end surfaces, and said second inner electrode extends so as to connect said first and second side surfaces;

first and second end surface terminal electrodes electrically connected to individual ends of said first inner electrode are provided on said first and second end surfaces, respectively;

first and second side surface terminal electrodes electrically connected to individual ends of said second inner electrode are provided on said first and second side surfaces, respectively; and

said widthwise dimension of said capacitor body is within a range of about 0.9 to about 1.1 times of said lengthwise dimension.

US 6,331,931 B1

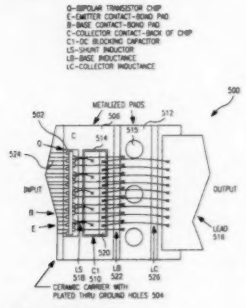
RADIO FREQUENCY POWER DEVICE IMPROVEMENT

John H. Titizian, Los Angeles; Jeffrey A. Burger, Rolling Hills Estates, and Young H. Kim, Fullerton, all of Calif., assignors to Integra Technologies, Inc., Torrance, Calif.

Division of application No. 09/289,526, filed on Apr. 9, 1999, now Pat. No. 6,181,200. This application Oct. 3, 2000, Appl. No. 677,926.

Int. Cl. H01G *4/228;4/232;4/06*

U.S. Cl. 361—306.3 **16 Claims**



1. A chip capacitor, comprising:

a bottom capacitor plate having upper and lower surfaces, said bottom capacitor plate being formed of a refractory metal;

a first thin metallization layer formed on said lower surface of said bottom capacitor plate for attachment to a metallized pad;

a dielectric layer disposed on a first region of said upper surface of said bottom capacitor plate;

a top capacitor plate disposed on an upper surface of said dielectric layer; and

a second thin film metallization layer formed on a second region of said upper surface of said bottom capacitor plate for attachment to a wire or ribbon bond.

US 6,331,932 B1

MONOLITHIC CERAMIC CAPACITOR

Fumiyuki Kobayashi, Takefu; Kazuaki Kawabata, Fukui; Yasushi Ueno, and Yasunobu Yoneda, both of Takefu, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

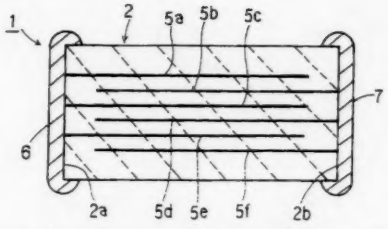
Filed Jan. 13, 2000, Appl. No. 482,225

Claims priority, application Japan, Jan. 28, 1999, 11-019939

Int. Cl. H01G *4/06*

U.S. Cl. 361—321.2 **6 Claims**

1. A monolithic ceramic capacitor comprising:



a sintered ceramic compact having a core-shell structure comprising cores composed of a particulate dielectric ceramic and shells formed on the cores and composed of a material having a dielectric constant lower than that of the dielectric ceramic;

at least two internal electrodes arranged in and separated by the ceramic sintered compact so as to overlap in the thickness direction; and

at least two external electrodes formed on the outermost faces of the ceramic sintered compact;

wherein the area ratio of the cores to the shells lies in a range of 7:3 to 3:7 in a cross-section of the sintered ceramic compact in an arbitrary direction.

US 6,331,933 B1

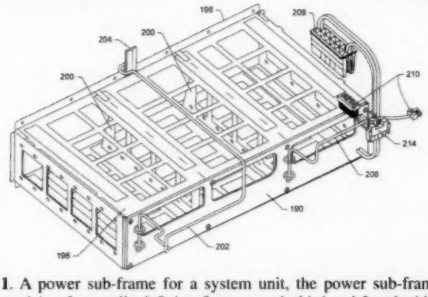
POWER SUB-FRAME FOR A SYSTEM UNIT

Gary S. Rumney, Leighton Buzzard, United Kingdom, assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Oct. 8, 1999, Appl. No. 415,143

Int. Cl. G06F *1/16;* **H05K** *5/02;* **H02G** *3/08*

U.S. Cl. 361—679 **26 Claims**



1. A power sub-frame for a system unit, the power sub-frame comprising four walls defining first, second, third and fourth sides of a frame, a fifth, open, side of the frame for receiving a plurality of power supply units for powering the system unit and a power distribution board located at a sixth side of the frame opposite to the open side for making electrical contact to the power supply units, wherein the power distribution board carries a plurality of power rails for supplying different components.

US 6,331,934 B1

COMPUTER DOCKING STATION WITH ANTI-THEFT LOCKING MECHANISMS FOR REMOVABLE COMPONENTS

Jacques H. Helot, San Mateo, Calif., and Michael D. Derocher, Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

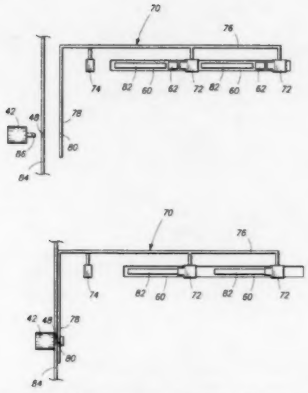
Filed May 1, 1998, Appl. No. 71,429

Int. Cl. H05K *5/00;7/00*

U.S. Cl. 361—686 **16 Claims**

1. A computer docking station comprising:

a component slot to hold a removable component;



at locking mechanism mounted to move between an unlocked and a locked position, the locking mechanism covering at least a portion of the component slot when in the locked position to prevent insertion or removal of the removable component, the locking mechanism not covering the component slot when in the unlocked position to allow insertion or removal of the removable component;

a lock to secure the locking mechanism in the locked position;

a docking tray to receive a portable computer when docked;

a fixed security post projecting upward from the docking tray and beside the portable computer to prevent removal of a component from the portable computer when the portable computer is docked; and

a lever that moves the locking mechanism from the locked to the the unlocked position.

US 6,331,935 B1

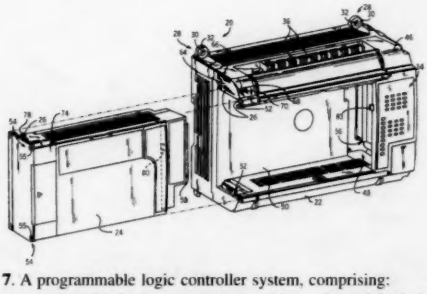
CONTROLLER ASSEMBLY HAVING A BASE UNIT WITH A DOCKABLE PROCESSOR UNIT

Michael S. Baran, Elm Grove, Wis., assignor to Rockwell Automation Technologies, Inc., Mayfield Heights, Ohio

Filed Sep. 29, 1998, Appl. No. 163,104

Int. Cl. G06F *1/16;* **H05K** *7/14*

U.S. Cl. 361—686 **20 Claims**



7. A programmable logic controller system, comprising:

a programmable logic controller assembly configured for industrial automation control, comprising:

a base unit having a mounting mechanism for affixing the base unit to an external structure;

a processor unit configured to engage the base unit; and

a latching mechanism that selectively fastens the processor unit with respect to the base unit, the latching mechanism including an interlocking slot and lip.

US 6,331,936 B1

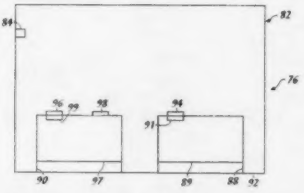
AC ADAPTER FOR A MODULE BAY IN A COMPUTER SYSTEM

Bo Hom; Sean P. O'Neal, both of Round Rock, and Rick W. Wahl, Cedar Park, all of Tex., assignors to Dell USA, L.P., Round Rock, Tex.

Filed Apr. 14, 1999, Appl. No. 291,364

Int. Cl. G06F *1/16;* **H05K** *7/10*

U.S. Cl. 361—686 **6 Claims**



1. A portable computer comprising:

a housing including a top portion pivotally mounted on a base portion, the base portion including an external DC connector, a module bay formed in the base portion, and an internal DC module bay connector;

a modular AC adapter removably mounted in the module bay, the adapter being provided with a stationary connector for engagement with the internal DC module bay connector;

a storage compartment in the adapter;

a first movable DC connector assembly including a cord storable in the storage compartment and a fixed connection to the adapter positioned in the storage compartment; and

a second movable AC connector assembly including a cord storable in the storage compartment and a movable connection to the adapter in the storage compartment, whereby the adapter is connectable externally of the base portion by connecting the movable DC connector assembly to the external DC connector, and the adapter is connectable internally of the base portion by inserting the adapter in the module bay and connecting the stationary connector with the internal DC module bay connector.

US 6,331,937 B1

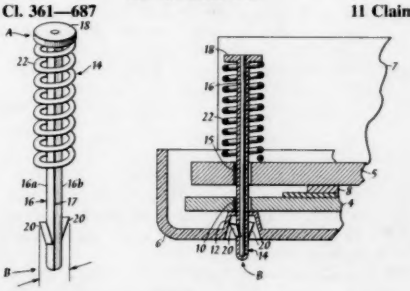
APPARATUS AND METHOD FOR SECURING A HEAT SINK TO AN ELECTRONIC COMPONENT IN A COMPUTER SYSTEM

Bernd Bartyzel, Austin, Tex., assignor to Dell USA, L.P., Round Rock, Tex.

Filed Jul. 28, 1999, Appl. No. 362,247

Int. Cl. G06F *1/20*

U.S. Cl. 361—687 **11 Claims**



1. A retaining clip, comprising:

a shaft having a first end and a second end;

a radially flexible member attached adjacent to and axially set back from the second end of the shaft so that the second end extends substantially from the radially flexible member; and

an axially compressible member carried by the shaft extending axially from adjacent the first end of the shaft towards the

second end, whereby the second end is substantially exposed for further aligned engagement of the clip and a cover including a boss and a hole formed in the boss, the radially flexible member engaging the hole for securing the shaft on the cover member.

US 6,331,938 B1

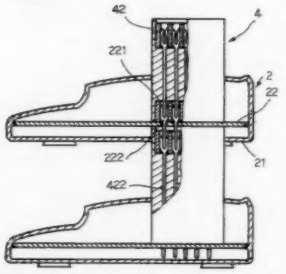
STRUCTURAL AND ELECTRICAL CONNECTIONS FOR STACKED COMPUTER DEVICES

Shyn-Tsong Hsieh, Taipei Hsien, and Shyn-An Hsieh, Chiluang, both of Taiwan, assignors to SURECOM Technology Corporation, Taipei Hsien, Taiwan

Filed Oct. 28, 1997, Appl. No. 959,195

Int. Cl. H05K *7/20*

U.S. Cl. 361—735 **11 Claims**



1. A system for structurally and electrically connecting a plurality of computer devices in a stacked relationship one above another and comprising:

a) a plurality of computer devices, each computer device having a case enclosing a circuit board with a pin receptacle and a pin group thereon, the case having first and second openings aligned with the pin receptacle and pin group, respectively, and opposite side portions;

b) a plurality of mounting holes in each of the opposite side portions of the case;

c) at least one connect plate having a first plurality of pins extending therefrom in engagement with the plurality of mounting holes in the side portion of one case, and a second plurality of pins extending therefrom in engagement with the plurality of mounting holes in the side portion of another case so as to structurally support one case above the other in a stacked relationship; and,

d) a parallel pin receptacle connector extending through the first opening of one case and the second opening of another case having a plurality of pins on a first end engaging the circuit board pin receptacle in one case, and a plurality of pin holes on a second end engaged with the pin group of another case to electrically connect the circuit boards of cases arranged in a stacked relationship.

US 6,331,939 B1

STACKABLE BALL GRID ARRAY PACKAGE

David J. Corisis, Meridian; Jerry M. Brooks, Caldwell, and Walter L. Moden, Meridian, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Division of application No. 09/072,101, filed on May 4, 1998, now Pat. No. 6,072,233. This application Oct. 12, 1999, Appl. No. 416,249.

Int. Cl. H05K *1/11*

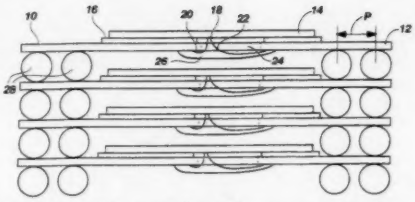
U.S. Cl. 361—784 **7 Claims**

1. A computer system comprising:

an input device;

an output device;

a processor, coupled to said input and output devices; and



a memory module, coupled to said processor, comprising:

a ball grid array, comprising:

a printed circuit board substrate having a first surface, a second surface, an aperture, at least one conductive element pad on said second surface and at least one terminal pad on said second surface;

a memory semiconductor device, mounted within a first perimeter of said first surface of said printed circuit board substrate and having at least one bond pad;

at least one wire bond, connected to the at least one bond pad and the at least one terminal pad on said second surface of said printed circuit board substrate while passing through said aperture;

a material placed along said aperture, on said at least one bond pad, said at least one terminal pad, and said at least one wire bond, forming a first profile height; and

a plurality of conductive elements, mounted along a second perimeter of said second surface, said second perimeter being greater than said first perimeter, and coupled to said at least one conductive element pad on said second surface, said plurality of conductive elements having a second profile height greater than said first profile height.

US 6,331,940 B1

EXPANSION CIRCUIT BOARD RETAINER

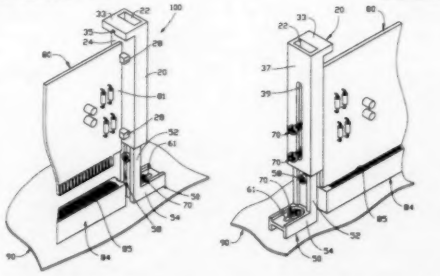
Wan-Cheng Lin, Tu-Chen, Taiwan, assignor to Hon, Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Nov. 5, 1999, Appl. No. 434,681

Claims priority, application Taiwan, May 28, 1999, 88208598 U

Int. Cl. H01R *12/16*

U.S. Cl. 361—785 **1 Claim**



1. An expansion circuit board retainer for adjustably securing expansion circuit boards with various sizes to a main board of a computer system, comprising:

a supporting bracket having a vertical rail and a horizontal platform extending in a first horizontal direction and for securing to the main board, wherein the vertical rail defines at least one threaded hole and the platform is fixed to the main board of the computer system; and

an adjustable sleeve defining a tunnel for vertically slidably receiving and being mounted to the vertical rail of the supporting bracket, a slot in a wall of the sleeve and communicating with the tunnel for aligning with the threaded hole and providing at least one bolt extending therethrough to fix the sleeve at a position on the rail, said sleeve forming pairs of

spaced blocks adapted to guide a side edge of a corresponding expansion circuit board and a retaining head to press the corresponding expansion circuit board downward for securing thereto; wherein

the retaining head extends in a second horizontal direction and defines a groove adapted to engage with a top edge of the corresponding expansion circuit board and press the corresponding expansion circuit board downward to a connector of the main board; wherein

each of the pairs of spaced blocks defines a passageway for guiding and receiving the side edge of the corresponding expansion circuit board.

US 6,331,941 B1

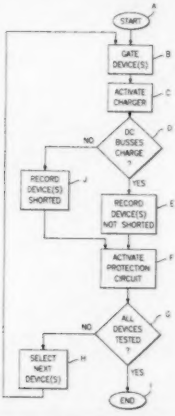
SHORT CIRCUIT DETECTION METHOD AND APPARATUS AND MOTOR DRIVE INCORPORATING SAME

David Smith, Roanoke, Va., assignor to General Electric Company, Schenectady, N.Y.

Provisional application No. 60/144,874, filed on Jul. 20, 1999. This application Jul. 20, 2000, Appl. No. 620,994.

Int. Cl. H02M *5/45;7/5387;* **H02H** *7/06*

U.S. Cl. 363—37 **31 Claims**



1. A method of testing an electrical circuit between at least two DC buses for shorts, said method comprising the steps of:

gating selected elements of the circuit;

activating a DC bus charger coupled to the DC buses while the circuit is gated;

detecting a first level of charge of the DC buses;

detecting a second level of charge of the DC buses;

comparing the first level of charge with the second level of charge to detect a charge difference over time and determine whether the circuit is shorted; and

discharging the DC buses after said detecting step.

US 6,331,942 B1

CONTENT ADDRESSABLE MEMORY CELL AND DESIGN METHODOLOGY UTILIZING GROUNDING CIRCUITRY

LuVerne R. Peterson, San Diego, Calif., assignor to Tality, L.P., San Jose, Calif.

Filed Sep. 9, 2000, Appl. No. 658,543

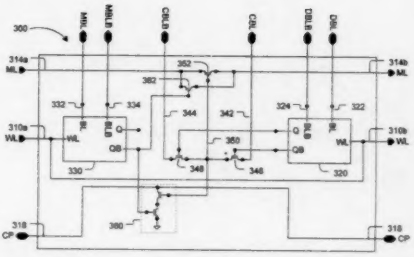
Int. Cl. G11C *15/00*

U.S. Cl. 365—49 **46 Claims**

1. A content addressable memory (CAM) cell comprising:

a comparison bit line;

a first CAM memory core cell configured to store data;



comparison circuitry coupled with the comparison bit line and the first CAM memory core cell;

a first P-channel transistor configured to communicate a comparison result to a match line using the Miller effect, the first P-channel transistor being coupled with the comparison circuitry; and

grounding circuitry coupled with a ground and the comparison circuitry.

US 6,331,943 B1

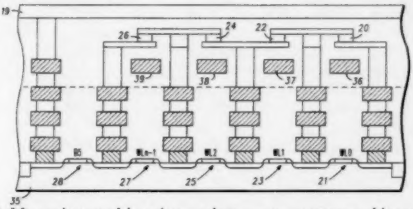
MTJ MRAM SERIES-PARALLEL ARCHITECTURE

Peter K. Naji, Phoenix; Mark DeHerrera, Tempe, and Mark Durlam, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 28, 2000, Appl. No. 649,117

Int. Cl. G11C *11/00*

U.S. Cl. 365—158 **23 Claims**



1. Magnetic tunnel junction random access memory architecture comprising:

an array of memory cells arranged in rows and columns, each memory cell including a magnetic tunnel junction and a control transistor connected in parallel, each control transistor including a control terminal;

a control line connected to the control terminal of each control transistor in a row of control transistors;

a metal programming line extending adjacent to each magnetic tunnel junction in the row; and

a plurality of vias connecting the metal programming line to the control line at spaced apart intervals.

US 6,331,944 B1

MAGNETIC RANDOM ACCESS MEMORY USING A SERIES TUNNEL ELEMENT SELECT MECHANISM

Douwe Johannes Monsma, Palo Alto; Stuart Stephen Papworth Parkin, San Jose, and Roy Edwin Scheuerlein, Cupertino, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

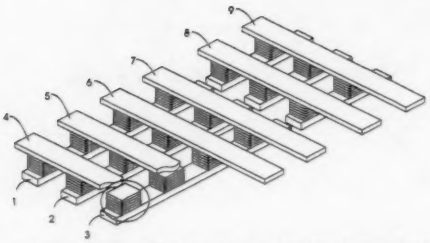
Filed Apr. 13, 2000, Appl. No. 549,172

Int. Cl. G11C *13/00*

U.S. Cl. 365—171 **22 Claims**

1. A non-volatile memory cell, comprising:

a non-linear selection element having a non-linear I-V characteristic, the non-linear selection element having at least a first metallic electrode layer, a barrier layer and a second metallic



electrode layer metal, the non-linear selection element having a non-linearity defined by a current having a first magnitude flowing through the non-linear selection element for a first bias voltage across the non-linear selection element that is ten times or more smaller than a current having a second magnitude flowing through the non-linear selection element for a second bias voltage across the non-linear selection element, the second bias voltage being about two times greater than the first bias voltage; and

a magnetic tunnel junction storage element connected in series with the non-linear tunnel selection element, the magnetic tunnel junction storage element having at least a first ferromagnetic layer, a thin insulating layer and a second ferromagnetic layer.

US 6,331,945 B1

NON-VOLATILE SEMICONDUCTOR MEMORY CAPABLE OF STORING ONE-BIT DATA OR MULTI-BIT DATA

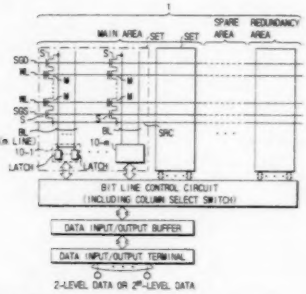
Noboru Shibata; Tomoharu Tanaka; Hiroto Nakai; Toshio Yamamura, all of Yokohama, and Susumu Fujimura, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation of application No. 09/323,455, filed on Jun. 1, 1999, now Pat. No. 6,122,193. This application Mar. 17, 2000, Appl. No. 528,112.

Claims priority, application Japan, Jun. 1, 1998, 10-151367

Int. Cl. G11C *16/06*

U.S. Cl. 365—185.03 **27 Claims**



1. A nonvolatile semiconductor memory comprising:

a memory cell array having memory cells in a matrix, each of said memory cells having a charge storing layer and a control gate electrode, and storing data corresponding to an amount of charge in said charge storing layer;

memory cell selecting means for selecting read cells for data read from the memory cells;

data latch circuits for latching data read from said read cells at the same time, said data latch circuits corresponding to said read cells, respectively;

a data latch selecting circuit for selecting one of said data latch circuits when said read cells store data of plural bits, and selecting at least two of said data latch circuits when said read cells store data of one bit;

data lines for receiving output data of said one or more data latch circuits; and

a data input/output buffer for transferring the output data of said data lines to a data input/output terminal.

US 6,331,946 B1

METHOD FOR PROTECTING ON-CHIP MEMORY (FLASH AND RAM) AGAINST ATTACKS

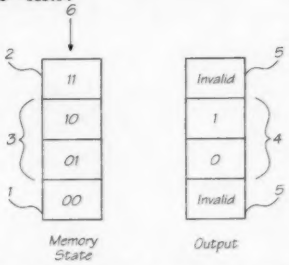
Kia Silverbrook, and Simon Robert Walmsley, both of Sydney, Australia, assignors to Silverbrook Research Pty Ltd, Balmain, Australia

Filed Jul. 10, 1998, Appl. No. 112,737

Claims priority, application Australia, Jul. 15, 1997, PO7991

Int. Cl. G11C *16/04*

U.S. Cl. 365—185.04 **3 Claims**



1. A method of providing for resistance to monitoring of an memory circuit having multiple level states corresponding to different output states, said method comprising utilizing the intermediate states only for valid output states.

US 6,331,947 B1

NON-VOLATILE MOS RAM CELL WITH CAPACITOR-ISOLATED NODES THAT ARE RADIATION ACCESSIBLE FOR RENDERING A NON-PERMANENT PROGRAMMED INFORMATION IN THE CELL A NON-VOLATILE ONE

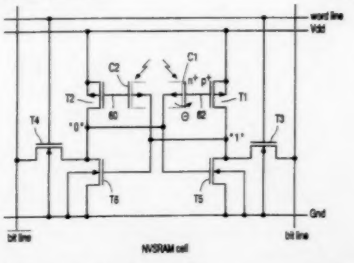
Franciscus P. Widdershoven; Anne J. Annema; Maurits M. N. Storms, and Marcellinus J. M. Pelgrom, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 3, 2000, Appl. No. 678,456

Claims priority, application European Pat. Off., Oct. 4, 1999, 99203238

Int. Cl. G11C *16/00*

U.S. Cl. 365—185.08 **11 Claims**



1. An integrated circuit comprising a memory with a non-volatile, random access memory cell comprising first and second inverters each having an output node cross-coupled by cross-coupling means to an input node of the other inverter for forming a MOS RAM cell, the output node of each inverter being selectively connected via the conductor paths of separate access transis-

tors to respective bit lines, the control electrodes of said access transistors being connected to a common word line,

the cell being arranged for providing both RAM and programmable Read-Only operation of said memory cell, being characterized in that said cross-coupling means comprising respective capacitor means (**C1**, **C2**) each in series with a control electrode of a respective p-type transistor of said first and second inverters, to render both interconnecting nodes between a capacitor and the gate electrode of its associated p-channel transistor floating, and through isolators around these nodes render the cell data-retentive,

nodes being transiently and electrically programmable through signals on the bit and word lines of the cell in question,

and in that said nodes are radiation-accessible for internal photoemission inducing short-wave radiation, that renders a non-permanent programmed information in said cell a non-volatile one.

US 6,331,948 B2

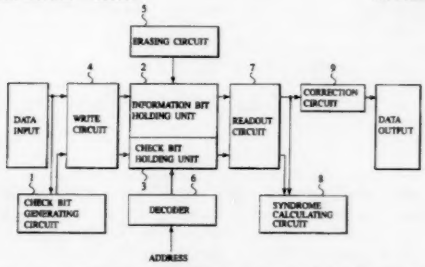
ERROR CORRECTING CIRCUIT FOR MAKING EFFICIENT ERROR CORRECTION, AND INVOLATILE SEMICONDUCTOR MEMORY DEVICE INCORPORATING THE SAME ERROR CORRECTING CIRCUIT

Takamichi Kasai, and Nozomi Kasai, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Dec. 7, 2000, Appl. No. 732,478

Int. Cl. G11C *16/06*

U.S. Cl. 365—185.09 **12 Claims**



1. A nonvolatile semiconductor memory device for making efficient error correction in a method of adjusting the distribution of threshold of cells after erasing, comprising:

an error correction code generating circuit for generating an error correction code necessary for carrying out error correction corresponding to each information data to be inputted, according to check bit generation matrix, said check bit generation matrix being so formed that the factors of "1" in respective rows satisfy the quantity absolutely necessary for generating an error correction code of a necessary bit length and the quantity of the factors of "1" is a odd number;

a holding unit in which said information data and error correction code generated by said check bit generating circuit are written and the written information data and the error correction code are held;

a write circuit for writing said information data and said error correction code into said holding unit;

an erasing circuit for erasing said information data and said error correction code held by said holding unit;

a readout circuit for reading out said information data and said error correction code held by said holding unit;

a detection circuit for detecting whether or not there is any error in information data read out by said readout circuit based on said error correction code read out by said readout circuit; and

a correction circuit for if there is any error in a detection result of said detection circuit, correcting information data having the error.

US 6,331,949 B1

CIRCUIT FOR STORING AND LATCHING DEFECTIVE ADDRESS DATA FOR A NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANT FUNCTION

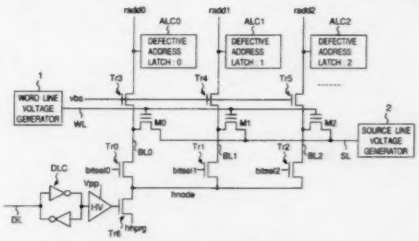
Yasuaki Hirano, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 26, 2000, Appl. No. 745,526

Claims priority, application Japan, Dec. 24, 1999, 11-366938

Int. Cl. G11C *16/06*

U.S. Cl. 365—185.09 **23 Claims**



1. A circuit for storing and latching defective address data representing an address of a defective portion occurring in a memory cell array of a nonvolatile semiconductor memory device having a redundant function, comprising:

floating gate field effect transistors for storing defective address data, each floating gate field effect transistor being electrically erasable and programmable and having a control gate, a drain, and a source;

a word line connected to the control gates of the floating gate field effect transistors;

bit lines connected to the drains of the floating gate field effect transistors;

a source line connected to the sources of the floating gate field effect transistors; and

latch means for latching the data stored in the floating gate field effect transistors,

wherein each floating gate field effect transistor assumes one of a high-threshold state and a low-threshold state, and has a threshold of 0 volts or less when in the low-threshold state.

US 6,331,950 B1

WRITE PROTECT INPUT IMPLEMENTATION FOR A SIMULTANEOUS OPERATION FLASH MEMORY DEVICE

Tiao-Hua Kuo, San Jose, Calif.; Yasushi Kasa, Kawasaki, Japan, and Johnny C. Chen, Cupertino, Calif., assignors to Fujitsu Limited, Kanagawa, Japan, and Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 19, 1999, Appl. No. 421,757

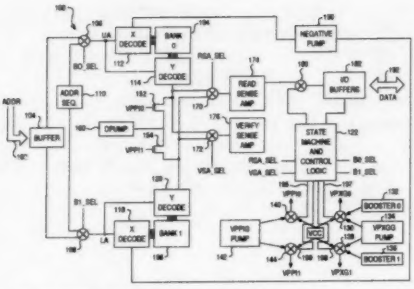
Int. Cl. G11C *7/00*

U.S. Cl. 365—185.18 **12 Claims**

1. An input circuit for a flash memory device, said input circuit comprising:

an input operative to receive a voltage from a source external to said flash memory device, said voltage representing a logic level;

a pull up circuit coupled with said input and operative to pull the voltage of said input to a high logic level when said input receives no voltage from said external source;



a buffer circuit coupled with said input and operative to buffer said voltage; and

a high voltage cut off circuit operative to disconnect said buffer from said input when said voltage exceeds a preset high voltage value.

US 6,331,951 B1

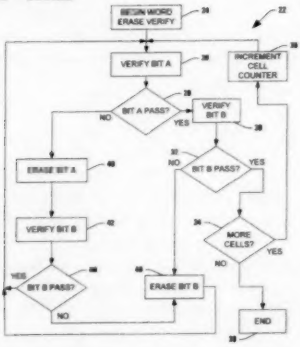
METHOD AND SYSTEM FOR EMBEDDED CHIP ERASE VERIFICATION

Edward V. Bautista, Jr., Santa Clara; Darlene G. Hamilton, San Jose, both of Calif.; Weng Fook Lee, Penang, Malaysia; Pau-Ling Chen, Saratoga, and Keith H. Wong, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 21, 2000, Appl. No. 717,550

Int. Cl. G11C *16/06*

U.S. Cl. 365—185.22 **23 Claims**



1. A method of verifying erasure of a dual bit memory cell, comprising:

performing a determination of whether a first bit in the dual bit memory cell is properly erased;

performing a first verification of whether a second bit in the dual bit memory cell is properly erased if the first bit is properly erased; and

determining that the dual bit memory cell is properly erased if the first bit is properly erased and if the second bit is properly erased according to the first verification.

US 6,331,952 B1

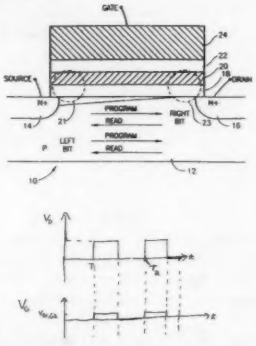
POSITIVE GATE ERASURE FOR NON-VOLATILE MEMORY CELLS

Janet S. Y. Wang, San Francisco; Narbeh Derhacobian, Belmont, and Ravi S. Sunkavalli, Milpitas, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Provisional application No. 60/182,752, filed on Feb. 16, 2000. This application Oct. 26, 2000, Appl. No. 697,810.

Int. Cl. G11C *16/04*

U.S. Cl. 365—185.29 **14 Claims**



1. A method of erasing a memory cell that comprises a first region and a second region with a channel therebetween and a gate above said channel, and a charge trapping region that contains a first amount of charge, the method comprising:

a) applying a first positive voltage across said gate; and

b) simultaneously with said applying step a), applying a second positive voltage to said first region, wherein said second positive voltage is greater than said first positive voltage.

US 6,331,953 B1

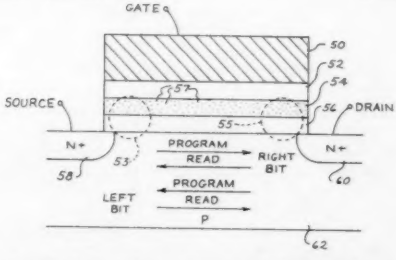
INTELLIGENT RAMPED GATE AND RAMPED DRAIN ERASURE FOR NON-VOLATILE MEMORY CELLS

Janet S. Y. Wang, San Francisco; Narbeh Derhacobian, Belmont, and Daniel Sobek, Portola Valley, all of Calif., assignors to Advanced Micro Devices, Sunnyvale, Calif.

Provisional application No. 60/182,821, filed on Feb. 16, 2000. This application Oct. 26, 2000, Appl. No. 697,813.

Int. Cl. G11C *7/00*

U.S. Cl. 365—185.29 **40 Claims**



1. A method of erasing a memory cell that comprises a first region and a second region with a channel therebetween and a gate above said channel, and a charge trapping region that contains a first amount of charge, the method comprising:

a) applying a voltage across said gate and said first region in accordance with a coarse erase sequence of voltages so that a portion of said first amount of charge is removed from said charge trapping region;

b) detecting the read current generated in response to the voltage applied in step a); and

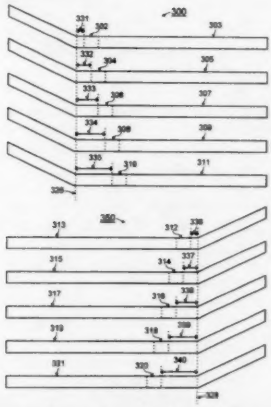
c) comparing the detected read current of step b) with a predetermined threshold current value, wherein should the detected current vary from a predetermined erase verified current value by at least a predetermined amount, then steps a)–c) are repeated, and should the detected current vary from said predetermined erase verified current by an amount less than said predetermined amount, then a voltage is applied across said first region in accordance with a fine erase sequence of voltages so that a portion of said first amount of charge is removed from said charge trapping region.

US 6,331,954 B1

DETERMINATION OF MISALIGNMENT FOR FLOATING GATES NEAR A GATE STACK BENDING POINT IN ARRAY OF FLASH MEMORY CELLS

John J. Wang; Jiang Li, both of San Jose, and Yider Wu, Campbell, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 28, 2001, Appl. No. 894,777
Int. Cl. G11C *16/34*
U.S. Cl. 365—185.29 **22 Claims**



10. A system for determining a level of misalignment of floating gate structures closest to a gate stack bending point in an array of flash memory cells, the system comprising:

a plurality of test flash memory cells, with each test flash memory cell having a respective floating gate structure designed to be disposed a respective displacement distance from a respective gate stack bending point;

voltage sources for providing voltages on a respective drain bit line junction, a respective source bit line junction, a respective control gate, and a respective substrate of each of said test flash memory cells during an erase operation for each of said test flash memory cells;

wherein said voltage sources provide testing voltages on said respective drain bit line junction, said respective source bit line junction, said respective control gate, and said respective substrate of each of said test flash memory cells during test biasing of each of said test flash memory cells; and

a respective current meter for measuring a respective amount of current flowing through each of said test flash memory cells when biased with said test voltages;

wherein said level of misalignment is determined from which of said test flash memory cells conducts a current level that is greater than a threshold current level when biased with said test voltages;

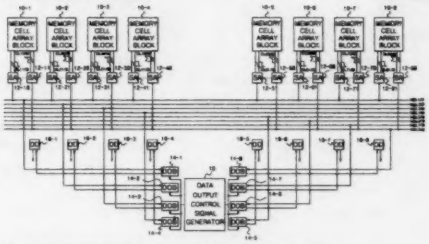
and wherein said level of misalignment is approximately equal to a highest one of said respective displacement distance corresponding to one of said test flash memory cells that conducts the current level that is greater than said threshold current level.

US 6,331,955 B1

SEMICONDUCTOR MEMORY DEVICE

Deok-Joon Shin, Seoul, and Young-Tae Kim, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 14, 2000, Appl. No. 662,102
Claims priority, application Rep. of Korea, Sep. 9, 1999, 99-38435
Int. Cl. G11C *7/00*
U.S. Cl. 365—189.05 **5 Claims**



1. A semiconductor memory device, comprising:

a plurality of memory cell array blocks;

a plurality of sense amplifiers coupled to said plurality of memory cell array blocks for amplifying and outputting data outputted from said plurality of memory cell array blocks, respectively;

a plurality of data output buffers for buffering and outputting the data outputted from said plurality of sense amplifiers in response to control signals;

a plurality of data output drivers for driving the data outputted from said plurality of data output buffers; and

a data output control signal generator for generating said control signals,

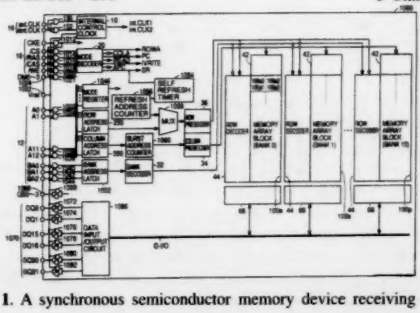
wherein said plurality of data output buffers are disposed adjacent said data output control signal generator and wherein the length of signal lines between said data output control signal generator and said plurality of data output buffers is shorter than that of signal lines between said plurality of data output buffers and said plurality of data output drivers.

US 6,331,956 B1

SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANT CIRCUIT OF HIGH REPAIR EFFICIENCY AND ALLOWING HIGH SPEED ACCESS

Tsukasa Ooishi; Shigeki Tomishima, and Hiroki Shimano, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 09/195,194, filed on Nov. 18, 1998, now Pat. No. 6,067,260. This application Feb. 11, 2000, Appl. No. 502,332.
Claims priority, application Japan, Jun. 22, 1998, 10-175000
Int. Cl. G11C *7/02;8/00*
U.S. Cl. 365—200 **3 Claims**



1. A synchronous semiconductor memory device receiving an

address signal and a control signal in synchronization with an external clock signal, comprising:

a memory cell array having a plurality of memory cells arranged in a matrix, said memory cell array including

a plurality of regular memory cell blocks, and

a redundant memory cell block for replacing a defective memory cell in said plurality of regular memory cell blocks;

an address bus provided in common to said plurality of regular memory cell blocks and said redundant memory cell block to transmit said address signal;

column select circuitry for selecting a memory cell column in the regular memory cell block and a memory cell column in the redundant memory cell block according to the address signal from said address bus;

a plurality of first data line pairs provided corresponding to said regular memory cell blocks each for transmitting data read out from a selected memory cell in a corresponding regular memory cell block;

a second data line pair provided corresponding to said redundant memory cell block to transmit data read out from a selected memory cell in the redundant memory cell block; and

a selector for selecting data transmitted by said second data line pair instead of data transmitted by one of said plurality of first data line pairs in accordance with an address of the defective memory cell.

US 6,331,957 B1

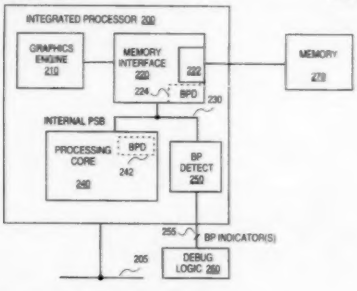
INTEGRATED BREAKPOINT DETECTOR AND ASSOCIATED MULTI-LEVEL BREAKPOINT TECHNIQUES

Tsvika Kurts, Haifa; Ofer J. Nathan, Kiryat Yam, both of Israel, and John M. Zavertnik, Hillsboro, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 14, 2000, Appl. No. 503,535

Int. Cl. G11C *7/00*; **G06F** *7/38*

U.S. Cl. 365—201 **26 Claims**



13. integrated circuit comprising:

a processor;

a bus;

a memory interface integrated onto a single integrated circuit with said processor, and coupled to communicate with said processor via said bus, said bus being substantially internal to said apparatus;

a breakpoint detector to provide a first indication responsive to a predetermined relationship between a programmable value and a condition related to said bus.

US 6,331,958 B2

SEMICONDUCTOR MEMORY DEVICE HAVING DATA PARALLEL/SERIAL CONVERSION FUNCTION AND CAPABLE OF EFFICIENTLY PERFORMING OPERATIONAL TEST

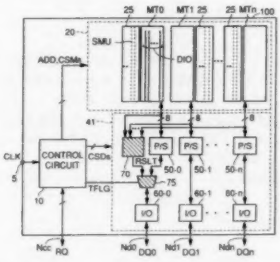
Masaki Tsukude, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 2000, Appl. No. 725,856

Claims priority, application Japan, Apr. 10, 2000, 12-107921

Int. Cl. G11C *7/00*

U.S. Cl. 365—201 **14 Claims**



1. A semiconductor memory device, comprising:

a plurality of input/output nodes each inputtingloutputting a signal in series;

a memory core portion for storing a data signal,

said memory core portion including a plurality of memory cells arranged in rows and columns, and a plurality of data lines each transmitting said data signal;

a plurality of data conversion circuits arranged between a plurality of internal nodes provided corresponding to said plurality of input/output nodes and said plurality of input/output nodes,

said data conversion circuits each receiving M (M is a natural number of at least 2) signals transmitted in parallel from said memory core portion to a corresponding one of said plurality of internal nodes, and transmitting the signals in series to a corresponding one of said plurality of input/output nodes; and

a test mode circuit arranged between said plurality of internal nodes and said memory core portion,

said test mode circuit including a plurality of data compression circuits each arranged for N (N is a natural number of at least 2) data lines,

said data compression circuits each generating K (K is a natural number smaller than N) test result signals according to the N data signals transmitted by said N data lines in a test mode, and

said test mode circuit transmitting M signals, at a time, of said test result signals generated by said plurality of data compression circuits in parallel to each of part of the internal nodes of said plurality of internal nodes.

US 6,331,959 B1

SEMICONDUCTOR MEMORY DEVICE AND CONTROL METHOD THEREOF

Takuya Hirota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 14, 2000, Appl. No. 525,611

Claims priority, application Japan, Mar. 17, 1999, 11-071551

Int. Cl. G11C *7/00*

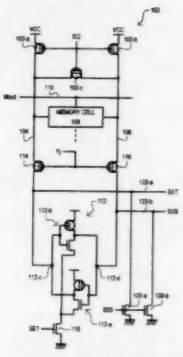
U.S. Cl. 365—207 **19 Claims**

1. A semiconductor device, comprising:

at least one digit line;

at least one memory cell coupled to the digit line;

a sense amplifier coupled to the digit line at a first sense amplifier input, the sense amplifier amplifying data signals from the memory cell; and



at least one switch circuit coupled to the first sense amplifier input, the switch circuit providing a low impedance path to a first potential after and not before the memory cell places data on the digit line and prior to the activation of the sense amplifier.

US 6,331,960 B1

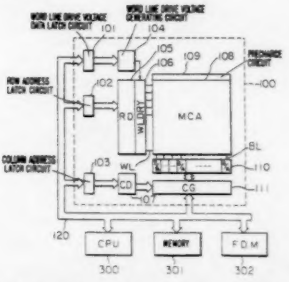
NONVOLATILE SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR USING THE SAME

Junichi Miyamoto, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of application No. 09/300,402, filed on Apr. 27, 1999, which is a division of application No. 09/136,305, filed on Aug. 19, 1998, now abandoned, which is a division of application No. 08/713,856, filed on Sep. 12, 1996, now Pat. No. 5,831,900. This application Aug. 21, 2000, Appl. No. 641,722. Claims priority, application Japan, Sep. 13, 1995, 7-234846

Int. Cl. G11C *7/00*

U.S. Cl. 365—219 **4 Claims**



2. A method for using a nonvolatile semiconductor memory device including nonvolatile memory cells which each have a source and a drain both formed on one surface of a semiconductor substrate, and including a floating gate and a control gate which are stacked on the semiconductor substrate above a portion between the source and the drain via insulation films, comprising:

when a first level of multi-level data is to be written, repeating a series of behaviors until writing of said first level is completed, said series of behaviors including: applying a predetermined write voltage between said control gate and said drain to introduce a charge into said floating gate and to change the threshold level of said nonvolatile memory cell; applying a voltage responsive to said first level to said control gate and detecting and amplifying a current flowing between the source and the drain of said nonvolatile memory cell to perform verify reading; and confirming whether the writing of said first level is finished or not;

when a second level of said multi-level data is to be written, repeating a series of behaviors including a first step and a second step until writing of said second value is completed, said first step including: applying said write voltage between said control gate and said drain to introduce a charge into said floating gate and to change the threshold value of said nonvolatile memory cell by a large amount than that for writing said first value; applying a voltage responsive to said second value to said control gate and detecting and amplifying a current flowing between the source and the drain of said nonvolatile memory cell to perform verify reading; and confirming whether the writing of said first value is finished or not, and said second step including: applying said write voltage between said control gate and said drain to introduce a charge into said floating gate and to change the threshold value of said nonvolatile memory cell; applying a voltage responsive to said second value to said control gate and detecting and amplifying a current flowing between the source and the drain of said nonvolatile memory cell to perform verify reading; and confirming whether the writing of said first value is finished or not.

US 6,331,961 B1

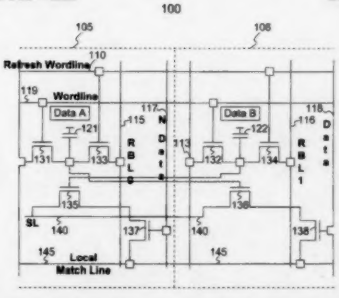
DRAM BASED REFRESH-FREE TERNARY CAM

Subramani Kengeri, San Jose, and Hemraj K. Hingarh, Saratoga, both of Calif., assignors to Silicon Access Networks, Inc., San Jose, Calif.

Filed Jun. 9, 2000, Appl. No. 591,033

Int. Cl. G11C *7/00*

U.S. Cl. 365—222 **20 Claims**



1. A content addressable memory (CAM) cell, said CAM cell comprising:

a first DRAM cell and a second DRAM cell, said first and second DRAM cells adapted to provide a ternary state option for said CAM cell;

a refresh word line (RWL) coupled to said first DRAM cell and said second DRAM cell, said RWL adapted to refresh said first and second DRAM cells;

a first refresh bit line (RBL) coupled to said first DRAM cell, said first RBL adapted to refresh said first DRAM cell; and

a second RBL coupled to said second DRAM cell, said second RBL adapted to refresh said second DRAM cell, wherein said RWL, said first RBL, and said second RBL accessible through a port adapted for refreshing said ternary state CAM cell.

US 6,331,962 B1

SEMICONDUCTOR DEVICE INCLUDING VOLTAGE DOWN CONVERTER ALLOWING TUNING IN SHORT PERIOD OF TIME AND REDUCTION OF CHIP AREA

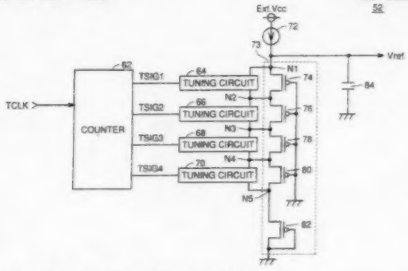
Mako Kobayashi, and Fukashi Morishita, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 2000, Appl. No. 489,474

Claims priority, application Japan, Jul. 26, 1999, 11-211029

Int. Cl. G05F *3/02;* **G11C** *13/00*

U.S. Cl. 365—226 **12 Claims**



1. A semiconductor device, comprising:

an input terminal receiving an externally applied control signal;

a tuning signal generating circuit outputting a tuning signal of a plurality of signal bits in response to a time change of said control signal of a single bit; and

a reference potential generating circuit receiving a first power supply potential and a second power supply potential lower than said first power supply potential, and outputting a reference potential in accordance with said tuning signal.

US 6,331,963 B1

SEMICONDUCTOR MEMORY DEVICE AND LAYOUT METHOD THEREOF

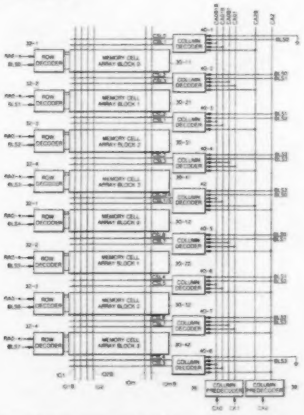
Ho Yeol Cho, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Jul. 7, 2000, Appl. No. 612,072

Claims priority, application Rep. of Korea, Oct. 11, 1999, 99-43826

Int. Cl. G11C *8/00*

U.S. Cl. 365—230.03 **2 Claims**



1. A semiconductor memory device, comprising:

a plurality of first memory cell array blocks connected to n/2 column select signal lines among n column select signal lines arranged in the same direction as word lines, including a plurality of memory cells connected between a plurality of the word lines and a plurality of bit line pairs;

a plurality of second memory cell array blocks connected to the remaining n/2 column select signal lines among said n column select signal lines, including identical memory cell array blocks to said plurality of first memory cell array blocks;

a plurality of first column decoders for generating (i) first decoding output signals for selecting the plurality of first memory cell array blocks and the plurality of second memory cell array blocks by decoding a first bit of a plurality of bits of a column address and (ii) second decoding output signals for selecting n/4 column select signal lines disposed at a top and a bottom side of each of the plurality of memory cell array blocks by decoding second bits except a first bit among the plurality of bits of a column address; and

a plurality of second column decoders for selecting n/4 column select signal lines of corresponding memory cell array blocks in response to corresponding block select signals among a plurality of block select signals for selecting said plurality of first and second memory cell array blocks, and said first decoding and second output signals;

wherein said n/4 column select signal lines are commonly connected to adjacent memory cell array blocks.

US 6,331,964 B1

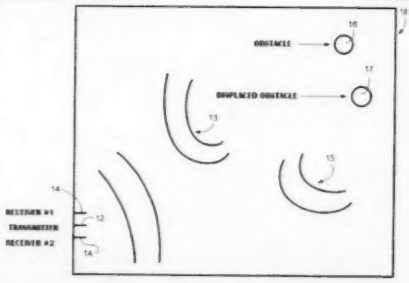
MOTION DETECTORS AND OCCUPANCY SENSORS BASED IN DISPLACEMENT DETECTION

Stephen Barone, 56 Village Hill Dr., Dix Hills, N.Y. 11746

Continuation of application No. PCT/US99/02811, filed on Feb. 9, 1999, Provisional application No. 60/074,149, filed on Feb. 9, 1998, Provisional application No. 60/097,873, filed on Aug. 25, 1998. This application Oct. 8, 1999, Appl. No. 415,940.

Int. Cl. G01S *3/80*

U.S. Cl. 367—128 **23 Claims**



1. A hybrid based load controller comprising:

a Doppler ultrasonic motion detector for measuring Doppler shifted components of an ultrasonic return signal from a monitored zone;

a passive infrared motion detector for processing a passive infrared return signal received from said monitored zone;

processing means for processing said Doppler shifted components of said ultrasonic return signal and said passive infrared signal to determine whether to generate a control signal, said processing means is selected from the group consisting of a rule-based expert system, a fuzzy logic system, and an artificial neural network; and

means for generating activating and deactivating control signals for controlling at least one electrical load.

US 6,331,965 B1

PORTABLE DEVICES AND TRANSMITTING/RECEIVING SYSTEMS INCLUDING THE PORTABLE DEVICES

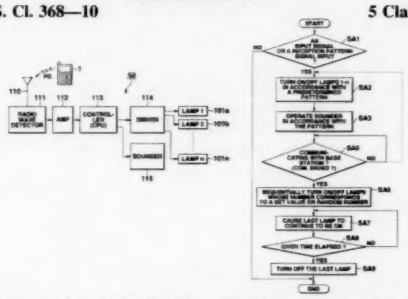
Yoshinori Sato, Higashine; Katuo Suzuki, Murayama; Osamu Ito, Yamagata-ken, and Yoshiichi Tokairin, Tendo, all of Japan, assignors to Casio Computer Co., Ltd., and Yamagata Casio Co., Ltd., both of Yamagata-ken, Japan

Filed Nov. 2, 1998, Appl. No. 184,833

Claims priority, application Japan, Nov. 4, 1997, 9-317671; Dec. 12, 1997, 9-011488; Dec. 12, 1997, 9-362979

Int. Cl. G04B *47/00*

U.S. Cl. 368—10 **5 Claims**



1. A portable device including detecting means for detecting reception of a signal at a portable terminal, said portable device comprising:

an independent main body that is separate from said portable terminal;

a plurality of turnable-on/off light emitters each disposed at respective positions on said main body;

controls means, responsive to said detecting means detecting reception of a signal at said portable terminal, for turning on/off said plurality of light emitters in accordance with a predetermined turning-on/off sequence to report the reception of the signal to a user.

US 6,331,966 B1

OPTICAL STORAGE APPARATUS AND RECORDING AND REPRODUCING METHOD OF OPTICAL STORAGE MEDIUM

Akira Minami, and Yoshiyuki Nanba, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 29, 1998, Appl. No. 162,525

Claims priority, application Japan, Mar. 16, 1998, 10-064990

Int. Cl. G11B *7/00*

U.S. Cl. 369—13 **35 Claims**

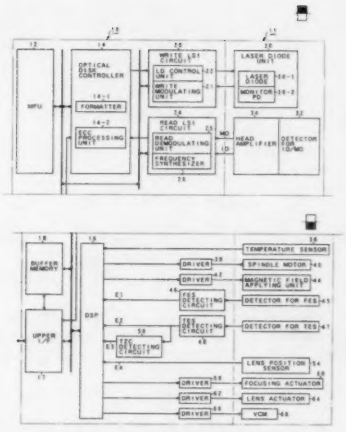
1. An optical storage apparatus comprising:

a recording unit for recording data to a recording layer of an optical storage medium having at least a recording layer to record data and a reproducing layer to reproduce the data recorded in said recording layer on a board at a recording density smaller than a beam diameter of a laser beam;

a reproducing unit for reproducing the data recorded in the recording layer of said optical storage medium at a recording density smaller than said beam diameter by setting a combination of a reproducing magnetic field and a reproducing laser power which are necessary for reproduction to best values; and

a calibration processing unit for measuring a reproducible state by performing the reproducing operation of said optical storage medium by said reproducing unit while changing said reproducing magnetic field and said reproducing laser power, thereby determining a set of the best values of the reproducing magnetic field and the reproducing laser power which are used in said reproducing unit on the basis of the reproducing magnetic field or the reproducing laser power at the time when said reproducible state is obtained,

wherein said calibration processing unit determines the best values of said reproducing magnetic field and said reproducing laser power every predetermined zone of said optical storage medium and stores and holds said best values into a memory.



US 6,331,967 B1

DISK-ROTATION CONTROL APPARATUS

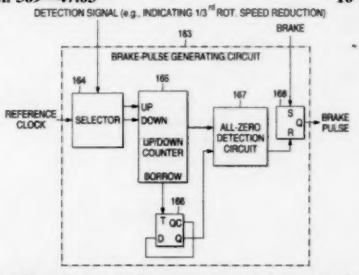
Shigeru Matsui; Noboru Yashima; Naoki Kizu; Kazuhiro Sugiyama, and Yukari Hiratsuka, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of application No. 09/058,844, filed on Apr. 13, 1998. This application Mar. 9, 2000, Appl. No. 522,075.

Claims priority, application Japan, Apr. 14, 1997, 9-95843

Int. Cl. G11B *7/00*

U.S. Cl. 369—47.03 **10 Claims**



1. A disk-rotation control apparatus arranged to control rotation of a disk, comprising:

a signal generator generating a signal synchronized with a signal reproduced from the disk;

a frequency divider dividing a reference signal into signals each having a predetermined frequency;

a brake signal output selectively outputting brake signals to decelerate rotation of the disk in accordance with a braking operation;

a rotational speed detector measuring a number of revolutions of the disk in such a manner as to measure the frequency of the signal generated by said signal generator at each predetermined interval of the signals divided by said frequency divider and transmit a detection signal when the rotational speed of the disk has been made to be lower than a predetermined value; and

a brake signal circuit measuring a time required from start of a braking operation to transmission of the detection signal from said rotational speed detector so as to control said brake signal output based on the measured time, said brake signal circuit including an updown counter that up counts to measure the

time required from the start of the braking operation to the transmission of the detection signal and a selector that switches said updown counter from an up-count state to a down-count state after transmission of the detection signal, a number of down counts during the down-count state controlling a length of time that said brake signal output outputs brake signals to decelerate rotation of the disk.

US 6,331,968 B1

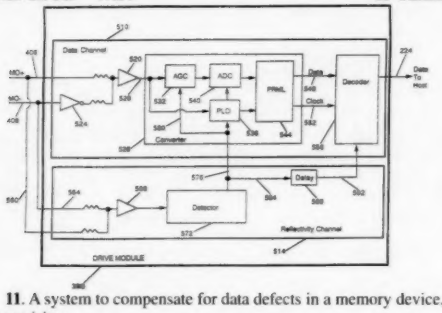
SYSTEM AND METHOD TO COMPENSATE FOR DATA DEFECTS WITHIN A MAGNETO-OPTICAL COMPUTER MEMORY DEVICE

Karl A. Belser, San Jose, Calif., assignor to Seagate Technology, Scotts Valley, Calif.

Continuation of application No. 08/825,651, filed on Apr. 3, 1997, now Pat. No. 5,892,745, Provisional application No. 60/022,775, filed on Jul. 30, 1996, Provisional application No. 60/023,476, filed on Aug. 6, 1996, Provisional application No. 60/025,801, filed on Aug. 27, 1996. This application Nov. 19, 1998, Appl. No. 196,902.

Int. Cl. G11B *15/52*

U.S. Cl. 369—47.14 **11 Claims**



11. A system to compensate for data defects in a memory device, comprising:

means for providing data signals to a data channel coupled to said memory device, wherein said data channel determines a rotation of a plane of polarization from a sensed light reflected from a surface of a storage medium to retrieve data means for analyzing an amplitude of a sensed light reflected from the surface of the storage medium to detect said data defects with a detector channel coupled to said data channel;

means for generating defect pulses corresponding to said data defects; and

means for providing said defect pulses to said data channel to compensate for said data defects.

US 6,331,969 B1

FOR RECORDING BY MODULATING THE WIDTH OF PITS IN ACCORDANCE WITH A PREDEFINED INFORMATION STREAM

Seiji Kobayashi, Kanagawa, and Toshihiro Fujiki, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

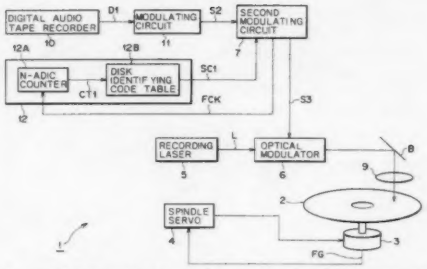
Filed Dec. 16, 1998, Appl. No. 213,012

Claims priority, application Japan, Dec. 18, 1997, 9-348387

Int. Cl. G11B *7/00*

U.S. Cl. 369—275.3 **28 Claims**

1. An optical disk recording apparatus for forming a first modulating signal whose signal level switches at each of a plurality of time periods in accordance with a main data row representing a first data, each of said time periods being an integer multiple of a predetermined basic period of time, wherein an optical beam that is controlled in accordance with the first modulating signal is transmitted onto a disk-like record medium to successively form pits and lands in accordance with each of said periods, said apparatus comprising:



first modulating signal forming means for forming the first modulating signal in accordance with the main data row;

pulse width detecting means for detecting a pulse width of the first modulating signal and outputting a result of the detection of the pulse width;

modulating signal processing means for forming a double modulating signal by modulating the signal level of the first modulating signal at said predetermined time period in accordance with a subcode and the detection of the pulse width;

means for determining whether a pit is of a predetermined length or longer;

means for determining a predetermined distance from an edge of the pit corresponding to a predetermined time period;

record beam modulating means for modulating the optical beam in accordance with the double modulating signal; and

means for changing a width of the pit at said predetermined distance based on the subcode representing a second data; and

an optical system for transmitting the optical beam onto the record medium.

US 6,331,970 B1

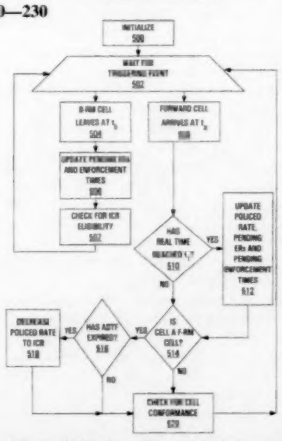
DYNAMIC GENERIC CELL RATE ALGORITHM FOR POLICING ABR TRAFFIC

Benjamin B. Nieh, Ottawa; John F. Pillar; Jacob Guttman, both of Nepean; Bernard Marchand, Cantley, and Sameh Rabie, Kanata, all of Canada, assignors to Nortel Networks Limited, Montreal, Canada

Filed Dec. 28, 1998, Appl. No. 220,857

Int. Cl. H04L *12/56*

U.S. Cl. 370—230 **25 Claims**



8. A method for policing the cell transmission rate of traffic from a variable cell transmission rate source in a cell relay communication system in which the source is informed of a new explicit cell

transmission rate (ER) periodically and the communication system enforces the ER after a response delay, the method comprising the steps of:

ensuring that traffic from the source complies with a current policed cell transmission rate (PR),

storing a plurality of stored ERs,

storing a plurality of stored enforcement times defined as the time at which enforcement of a corresponding stored ER begins,

monitoring for a new ER to be enforced, and

upon detecting a new ER to be enforced, the further steps of:

determining a tentative enforcement time for the new ER,

comparing the PR, the stored ERs, and the new ER,

determining to which of a set of pre-determined permutation groupings the relative values of the PR, the stored ERs, and the new ER belong,

carrying out one of a set of pre-determined approximations to adjust the values of the stored ERs and the stored enforcement times, the choice of which approximation to carry out being dependent on the permutation grouping to which the relative values of the PR, the stored ERs, and the new ER belong, and the approximation having been pre-determined so as to eliminate the stored ER and the stored enforcement time of the lower of the two adjacent transmission rates for which the lower transmission rate is not the PR or the new ER which have a difference in transmission rate lower than any other two adjacent transmission rates for which the lower transmission rate is not the PR or the new ER.

US 6,331,971 B1

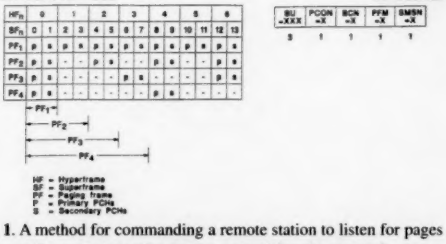
ENHANCED SLEEP MODE IN RADIOCOMMUNICATION SYSTEMS

Alex Krister Raith, Durham, N.C., assignor to Telefonaktiebolaget LM Ericsson (publ), Stockholm, Sweden

Division of application No. 08/331,951, filed on Oct. 31, 1994, now Pat. No. 5,539,748, which is a division of application No. 08/147,257, filed on Nov. 1, 1993, now Pat. No. 5,603,081. This application Jun. 6, 1995, Appl. No. 467,876.

Int. Cl. G08C *17/00*

U.S. Cl. 370—311 **11 Claims**


HF$_n$ 0 1 2 3 4 5 6
SF$_n$ 0 1 2 3 4 5 6 7 8 9 10 11 12 13
PF$_1$ p s p s p s p s p s p s p s
PF$_2$ p s - - p s - - p s - - p s
PF$_3$ p s - - - - p s - - - - p s
PF$_4$ p s - - - - - - p s - - - -
PF$_1$
PF$_2$
PF$_3$
PF$_4$
HF = Hyperframe
SF = Superframe
PF = Paging frame
P = Primary PCHs
S = Secondary PCHs
SU =XXX
PCON =X
BCN =X
PFM =X
SMSN =X
3 1 1 1 1

1. A method for commanding a remote station to listen for pages in a radio communication system comprising the steps of:

providing a plurality of paging frame classes, each class having a different repeat period for listening for paging message;

assigning one of said plurality of paging frame classes to said remote station when said remote station registers with said system; and

transmitting after said mobile station registers with said system, a paging frame modifier which commands said mobile to either use said assigned paging frame class or to use a different paging frame class;

wherein said paging frame modifier is transmitted as a single bit on a SPACH SMS point to point paging and access response channel.

US 6,331,972 B1

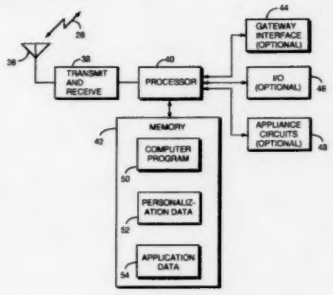
PERSONAL DATA STORAGE AND TRANSACTION DEVICE SYSTEM AND METHOD

Jeffrey Martin Harris; Ernest Earl Woodward, both of Chandler, and Ronald W. Borgstahl, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 3, 1997, Appl. No. 794,312

Int. Cl. H04Q *7/00*

U.S. Cl. 370—313 **18 Claims**



17. An electronic device, comprising:

an antenna;

a transmitter having an output coupled to the antenna for transmitting an unsolicited message that includes an identification code of the electronic device;

a receiver having an input coupled to the antenna for receiving an unsolicited message that includes an identification code of another electronic device and a response message based on the identification code of the electronic device; and

a display having terminals coupled to an output of the receiver for receiving signals that configure the display for an application based on the response message.

US 6,331,973 B1

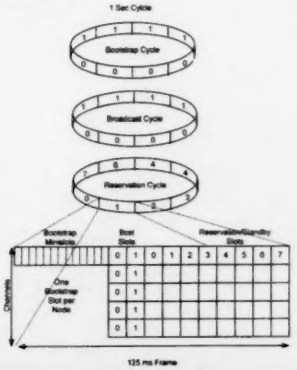
UNIFYING SLOT ASSIGNMENT PROTOCOL MULTIPLE ACCESS SYSTEM

C. David Young, Plano; Roy W. Krueger, Bedford; Michael S. Becker, Dallas; Henry O. Harwell, Garland, and James A. Stevens, Allen, all of Tex., assignors to Rockwell Collins, Inc., Cedar Rapids, Iowa

Filed Apr. 30, 1999, Appl. No. 303,528

Int. Cl. H04B *7/212*

U.S. Cl. 370—337 **39 Claims**



1. A method for automatically managing communication channel resources between nodes having neighboring nodes in a network of transceiver nodes, wherein each node communicates during spe-

cific time slots and uses multiple frequencies using a time division multiple access structure, the method comprising:

storing possible communications time slots and frequencies between nodes in the network at each node;

announcing and transmitting from a first node during a specific time slot, a specific transmit slot and frequency and the identification of a second node to all neighboring nodes of the first node comprising a first set of neighboring nodes;

transmitting from the first node in a bootstrap slot a control packet containing:

a set of slot and frequency pairs on which the first node is transmitting;

a set of slot and frequency pairs on which the first node is receiving; and

a set of slot and frequency pairs on which the first set of neighboring nodes are transmitting on;

identifying in each of the nodes of the first set of neighboring nodes the announced selected transmit slot and frequency used to establish substantially contention free communication on the selected transmit slot and frequency between the first and second nodes; and

assigning slot and frequency pairs from the communications channel resources by utilizing a heuristics.

US 6,331,974 B1

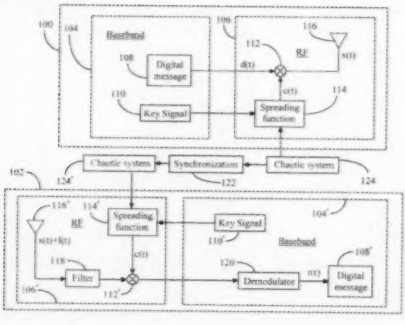
CHAOTIC DIGITAL CODE-DIVISION MULTIPLE ACCESS (CDMA) COMMUNICATION SYSTEMS

Tao Yang, and Leon O. Chua, both of Berkeley, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Provisional application No. 60/050,460, filed on Jun. 23, 1997. This application Jun. 23, 1998, Appl. No. 103,044.

Int. Cl. H04B *7/216*

U.S. Cl. 370—342 **47 Claims**



1. A method of modulating a code-division multiple access device that receives information to be transmitted from a selected device, said method comprising the steps of:

a. chaotically generating a seed signal;

b. spreading the spectrum of said seed signal of step a. to generate a spread spectrum signal; and

c. modulating said spread spectrum signal from step b. with said information to be transmitted.

US 6,331,975 B1

USER DATA INDICATOR FOR DISCONTINUOUS TRANSMISSION

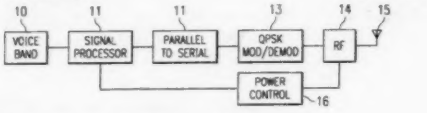
Srinath Hosur; Timothy M. Schmidl, both of Dallas, and Anand G. Dabak, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 28, 1998, Appl. No. 181,510

This patent is subject to a terminal disclaimer.

Int. Cl. H04J *11/00;* **H04B** *7/185;7/216;* **H04Q** *7/20*

U.S. Cl. 370—342 **33 Claims**



1. A communication circuit, comprising:

a processing circuit coupled to receive a plurality of first control signals, a second control signal, and a first power control signal from a source external to the communication circuit during a predetermined time, the plurality of first control signals being equally spaced apart in time, the second control signal being proximate one of the first control signals, the processing circuit producing a second power control signal in response to at least two of the plurality of first control signals; and

a serial circuit coupled to receive the second power control signal, the serial circuit producing a plurality of third control signals and the power control signal.

US 6,331,976 B1

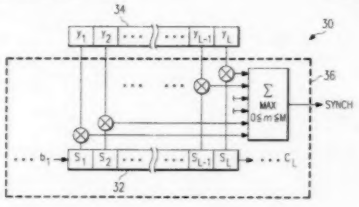
CIRCUITS SYSTEM AND METHODS FOR SYNCHRONIZATION WORD DETECTION IN BITSTREAM COMMUNICATIONS APPARATUS

Sundararajan Sriram, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 10, 1997, Appl. No. 987,992

Int. Cl. H04J *3/06*

U.S. Cl. 370—350 **32 Claims**



1. A communication system, comprising:

circuitry for receiving a bitstream packet, the bitstream packet comprising:

a plurality of preamble prefix bits having a predetermined bit pattern;

a plurality of synchronization word bits following the plurality of preamble prefix bits; and

a plurality of data bits following the plurality of synchronization word bits;

circuitry for completing a carrier and clock recovery operation in response to receiving a first portion of the plurality of preamble prefix bits;

circuitry for determining a location of the plurality of synchronization word bits within the bitstream packet, the circuitry for determining comprising circuitry for performing a number of comparisons between a bit test pattern vector and a sample vector of bits from the bitstream packet;

wherein the bit test pattern vector and the sample vector of bits both change for each of the number of comparisons;

wherein for at least one of the number of comparisons the sample vector of bits comprises a second portion of the

plurality of preamble prefix bits following the first portion of the plurality of preamble prefix bits; and

wherein for at least some of the number of comparisons the bit test pattern vector comprises one or more bits matching the predetermined bit pattern of the plurality of preamble prefix bits and further comprises one or more bits matching the synchronization word bits.

US 6,331,977 B1

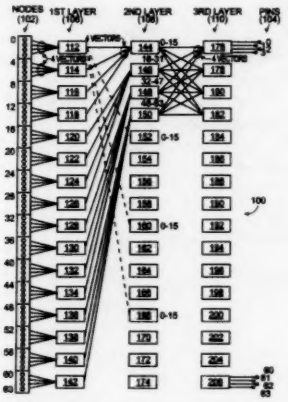
SYSTEM ON CHIP (SOC) FOUR-WAY SWITCH CROSSBAR SYSTEM AND METHOD

Dieter Spaderna, Portland, Oreg.; Michael Roberts, and Raed Sabha, both of Vancouver, Wash., assignors to Sharp Electronics Corporation, Mahwah, N.J., and Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 28, 1998, Appl. No. 143,148

Int. Cl. H04L *12/50*

U.S. Cl. 370—360 **21 Claims**



1. A System On Chip (SOC) crossbar switching network with a small time delay comprising:

N input nodes;

N output nodes;

n layers of N switches to multiplex signals between said input and output nodes;

in which each switch has 2i signal inputs operatively connected to said input nodes, each said switch multiplexing the input signals to provide an output signal at a signal output, and in which each said switch has i control inputs to select which input signal is output by said switch; and

in which $N=2^{(n+i+1)}$, whereby each said output node is connectable to any said input node.

US 6,331,978 B1

GENERIC LABEL ENCAPSULATION PROTOCOL FOR CARRYING LABEL SWITCHED PACKETS OVER SERIAL LINKS

Rayadurgam Ravikanth, Burlington, Mass.; Ove Strandberg, Cupertino, Calif., and Pasi Vaananen, Sommerville, Mass., assignors to Nokia Telecommunications, Oy, Espoo, Finland

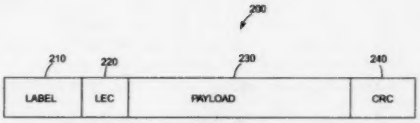
Filed Mar. 9, 1999, Appl. No. 264,758

Int. Cl. H04L *12/56;* **G06F** *15/16*

U.S. Cl. 370—392 **33 Claims**

1. A method for encapsulating a label in a packet enabling label switching of the packet over serial links, comprising:

adding a multi-protocol label and a multi-protocol label error correction to the front of a datagram, the label error correction



being delivered using the label and the multi-protocol label error correction enabling identification of the end of the packet; and

adding a cyclic redundancy check at a trailing end of the datagram, the cyclic redundancy check being derived using the datagram.

US 6,331,979 B1

METHOD AND APPARATUS FOR CONNECTING COMPUTER TO SATELLITE ANTENNA

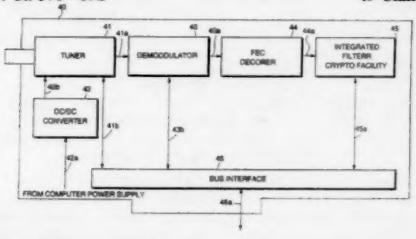
Douglas M. Dillon, Gaithersburg, and Robert D. Cassagnol, Silver Spring, both of Md., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Division of application No. 08/862,346, filed on May 23, 1997, now Pat. No. 6,125,184, which is a division of application No. 08/557,398, filed on Nov. 13, 1995, now Pat. No. 5,652,795, which is a continuation-in-part of application No. 08/340,347, filed on Nov. 14, 1994, now abandoned. This application Sep. 25, 2000, Appl. No. 668,464.

This patent is subject to a terminal disclaimer.

Int. Cl. H04B *1//16*

U.S. Cl. 370—392 **49 Claims**



1. An apparatus comprising:

a connector that is configured to connect said apparatus to an antenna device comprising an antenna capable of receiving a signal from a satellite;

a tuner that is configured to receive a satellite signal from said connector and to perform tuning on the satellite signal;

a demodulator that is configured to receive the tuned satellite signal from said tuner and to perform demodulation on the tuned satellite signal, thereby outputting a demodulated data stream, wherein the demodulation is performed in accordance with control by a computer;

a forward error corrector that is configured to receive the demodulated data stream from said demodulator and to perform forward error correction on the demodulated data stream, thereby outputting a corrected data stream;

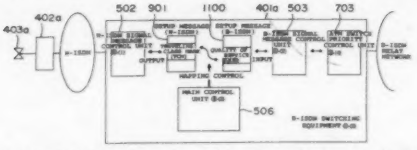
an address filterer that is configured to receive the corrected data stream from said forward error corrector and to perform address filtering upon frames within the corrected data stream, thereby outputting frames selected in accordance with the address filtering; and

an interface that is configured to receive the selected frames from said address filterer and to output the selected frames to the computer.

US 6,331,980 B1
SWITCHING EQUIPMENT CAPABLE OF TRANSFERRING PRIORITY INFORMATION AND PRIORITY CONNECTING METHOD

Shinichiro Matsuo, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 19, 1998, Appl. No. 44,436
Claims priority, application Japan, Oct. 8, 1997, 9-275844
Int. Cl. H04L *12/66*
U.S. Cl. 370—395 **6 Claims**



1. A switching equipment capable of transferring priority information, for relaying over first and second networks having different protocols. comprising:

a receiving message control unit for extracting priority information of a call-out terminal from a first message format received from said first network;

a main control unit for converting the priority information obtained from said receiving message control unit into a second message format; and

a transmitting message control unit for transmitting to said second network the priority information converted into the second message format by said main control unit, wherein said first network is an N-ISDN,

the priority information is call-out terminal regulation class information based on Q.931-a,

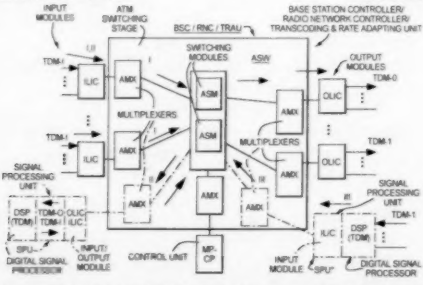
said second network is a B-ISDN, and

the priority information after being converted is a QOS class prescribed in an ATM forum (UNI4.0).

US 6,331,981 B1
METHOD AND NETWORK COMPONENT FOR SWITCHING LOW BIT RATE CONNECTIONS BETWEEN INPUT MODULES AND OUTPUT MODULES IN A COMMUNICATION NETWORK

Arno Harth, Wolfratshausen; Petra Tippmann-Krayer, Freising; Peter Holzner, Germering; Werner Korte, Munich; Karl Schrodi, Geretsried, and Andreas Klug, Kirchheim, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 22, 1998, Appl. No. 158,061
Claims priority, application Germany, Dec. 23, 1997, 197 57 598
Int. Cl. H04L *12/56*
U.S. Cl. 370—395.1 **25 Claims**



1. A method for switching low bit rate connections between input and output modules connected to a network component in a communication network, comprising the steps of:

providing input and output modules with an ATM switching stage connected therebetween;

forming a first switching level comprising said input modules and said output modules;

forming a second switching level comprising said ATM switching stage;

in said first switching level, merging a plurality of low bit rate connections at said input module, which are all to be transmitted to one of said output modules, into at least one ATM connection;

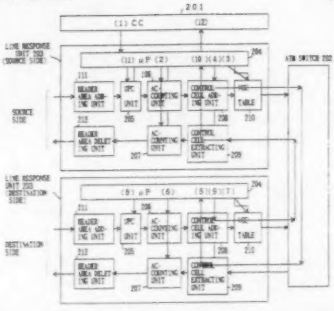
in said second switching level, switching through said at least one ATM connection by said switching stage for transmission of information in ATM cells; and

in said first switching level, converting said through-switched ATM connection in said one of said output modules into a low bit rate connection.

US 6,331,982 B1
CONNECTION CONTROL SYSTEM AND METHOD IN A SWITCH

Yoshihiro Watanabe, Kanagawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 6, 1996, Appl. No. 692,475
Claims priority, application Japan, Aug. 31, 1995, 7-223514
Int. Cl. H04L *12/56*
U.S. Cl. 370—399 **13 Claims**



1. A connection control method for use in a switch where a fixed-length cell input from a first or second line via a first or second line response unit is transferred to the second or first line as opposed to the first or second line via the second or first line response unit as opposed to the first or second line response unit, by being self-switched in the switch, according to routing information which is set in a header and added to the fix length cell, comprising the steps of:

transmitting a connection control cell where connection identification information corresponding to a specified connection is set, routing information indicating a route to the second or first line response unit as opposed to the first or second line response unit is set in the header, connection control information identifying it as the connection control cell is set in an empty area of the header, and connection information for controlling the specified connection is stored, to the switch by the first or second line response unit;

extracting the connection control cell reciprocally by the first and second line response units input from the switch according to the connection control information; and

starting inflow of subscriber cells corresponding to the specified connection from the first line or the second line according to the connection information in the extracted connection control cell by the first line response unit or second line response unit.

US 6,331,983 B1

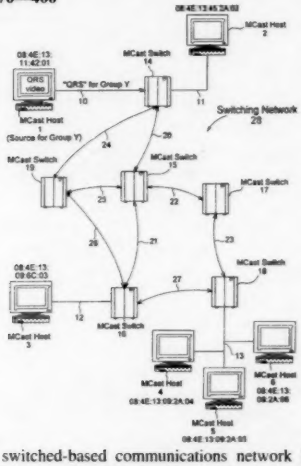
MULTICAST SWITCHING

William T. Haggerty, Dunstable, Mass.; Phillip Andlauer, Londonderry, and Stephen H. Negus, Windham, both of N.H., assignors to Enterasys Networks, Inc., Rochester, N.H.

Filed May 6, 1997, Appl. No. 852,188

Int. Cl. H04L *12/66*

U.S. Cl. 370—400 **36 Claims**



1. In a switched-based communications network including a plurality of hosts and switches connected by links, each switch having at least one network port connected to another switch and at least some switches having access ports connected to hosts, each host having a unique address, and each switch including a connection database of valid connections between different ports on the switch and a switching setup mechanism for establishing temporary connections between the different ports on the switch, the improvement comprising a method for processing multicast packets comprising steps of:

receiving, at a source switch, a multicast packet on an access port from a source host;

determining, by the source switch, a group address from the multicast packet; and

composing and sending, by the source switch, a sender present message, containing the group address and the source host address, to other switches on its network ports wherein a receiving switch receives the sender present message and determines whether a local host attached to one of its access ports wishes to join the group address identified in the sender present message;

if yes, the receiving switch composes and sends a map message toward the source switch on a predetermined path, the map message containing the group address, the source host address and the predetermined path between the receiving switch and the source switch.

US 6,331,984 B1

METHOD FOR SYNCHRONIZING NETWORK ADDRESS TRANSLATOR (NAT) TABLES USING THE SERVER CACHE SYNCHRONIZATION PROTOCOL

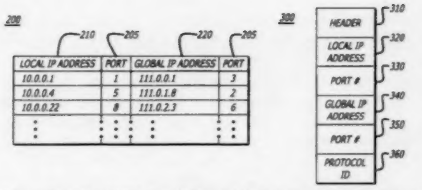
James V. Luciani, Groton, Mass., assignor to Nortel Networks Limited, St. Laurent, Canada

Filed Aug. 21, 1998, Appl. No. 137,571

Int. Cl. H04L *12/50;12/56*

U.S. Cl. 370—401 **12 Claims**

1. A method for a border router associated with a routing domain to distribute network address translator (NAT) translation table information to interconnected border routers in the routing domain, comprising:



a) inserting the NAT translation table information into a Server Cache Synchronization Protocol (SCSP) Cache State Advertisement (CSA) packet; and

b) distributing the SCSP CSA packet to the interconnected border routers.

US 6,331,985 B1

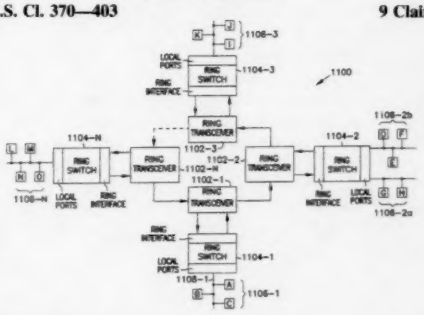
TELECOMMUNICATION NETWORK WITH VARIABLE ADDRESS LEARNING, SWITCHING AND ROUTING

Michael H. Coden, Riverdale, N.Y., assignor to ADC Telecommunications, Inc., USA

Continuation-in-part of application No. 08/915,919, filed on Aug. 21, 1997. This application Aug. 21, 1998, Appl. No. 137,669.

Int. Cl. H04L *12/28*

U.S. Cl. 370—403 **9 Claims**



1. A method for processing data packets in a ring switch of a ring network, the method comprising:

receiving a data packet at a ring-in port of the ring switch;

reading a selected source identifier of the ring packet;

when the source identifier is not in a table for a port of the ring switch, storing the source identifier in the table with an indication that the identifier is for a network device associated with a ring-out port of the ring switch;

reading a selected destination identifier from the data packet;

when the destination identifier for the data packet is in a table for the ring switch, switching the data packet to the port of the ring switch that is associated with the destination identifier;

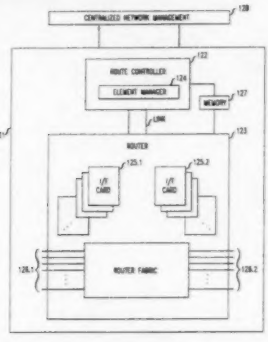
when the destination identifier for the data packet is not in a table for the ring switch or the data packet is a broadcast data packet, broadcasting the data packet; and

when the destination identifier for the data packet is a multicast identifier, broadcasting the data packet to all appropriate ports of the ring switch.

US 6,331,986 B1
METHOD FOR RESOURCE ALLOCATION AND ROUTING IN MULTI-SERVICE VIRTUAL PRIVATE NETWORKS

Debasis Mitra, Summit; John A. Morrison, New Providence, and Kajamalai Gopalaswamy Ramakrishnan, Berkeley Heights, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 24, 1998, Appl. No. 65,506
Int. Cl. H04J *3/16*
U.S. Cl. 370—468 **29 Claims**



1. A method for allocating bandwidth capacity on links of a communication network that supports plural subnetworks and plural communication services, and in which sets of permissible routes are defined between respective source-destination pairs for each said subnetwork and service, wherein:

the method comprises, in each of two or more iterations:

(a) partitioning the bandwidth capacity of each of at least some links of the network among the subnetworks that share that link; and

(b) in each of two or more subnetworks, for each service and for each source-destination pair served thereby, determining a traffic rate to be offered to each permissible route between said source-destination pair;

at least one instance of (a) is based on an allocation of traffic rates resulting from a prior instance of (b); and

at least one instance of (b) is based on a partition of link capacity among subnetworks resulting from a prior instance of (a).

US 6,331,987 B1
METHOD AND SYSTEM FOR BUNDLING DATA IN A DATA-OVER-CABLE SYSTEM

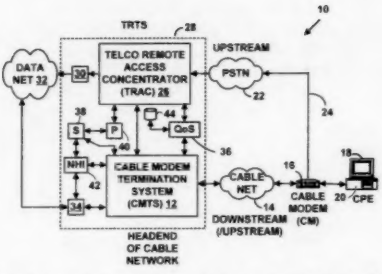
Nurettin B. Beser, Evanston, Ill., assignor to 3COM Corporation, Santa Clara, Calif.

Filed May 27, 1998, Appl. No. 85,586
Int. Cl. H04H *1/04*
U.S. Cl. 370—486 **21 Claims**

1. A method for bundling data in a data-over-cable system having a plurality of network devices, the data-over-cable system having a plurality of channels, where at least one channel connects the data-over-cable system to a network outside of the data-over-cable system, the method comprising the steps of:

defining a data-identification parameter associated with a data-packet;

receiving one or more data-packets with an associated data-identification parameter on a first network device from a plurality of second network devices, said first network device having a plurality of channels where at least one of said channels is labeled by a channel-identification parameter;



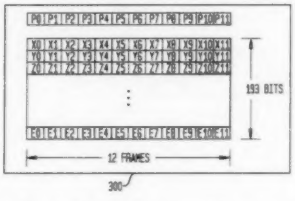
determining a first channel on said first network device labeled by a first-channel-value with a channel-identification parameter corresponding to said data-identification parameter of said data-packet; and

transmitting said data-packets on said first channel from the first network device to a network outside of the data-over-cable system.

US 6,331,988 B1
MULTIPLE LINE FRAMER ENGINE

Alvaro Luis Marenco, and Jaime Tadeo Mitchell, both of Bethlehem, Pa., assignors to Agere Systems Guardian Corp., Allentown, Pa.

Filed Jul. 31, 1997, Appl. No. 903,588
Int. Cl. H04J *3/06*
U.S. Cl. 370—510 **26 Claims**



1. A telecommunications system comprising:

a line interface unit;

a framer engine for framing up data from multiple telecommunication lines, said framing engine including:

at least one memory bank for pre-aligning and storing data received from said line interface unit, said at least one memory bank having a memory configuration for use with a given frame transmission format; and

a recognition unit responsive to said pre-aligned and stored data for determining a given framing bit pattern.

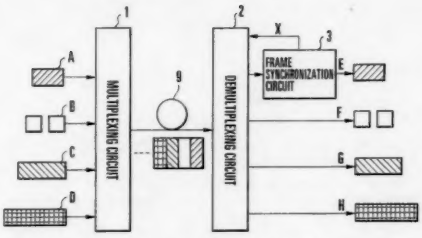
US 6,331,989 B1
MULTIPLEX TRANSMISSION METHOD AND SYSTEM

Hiroshi Tezuka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 18, 1998, Appl. No. 25,262
Claims priority, application Japan, Feb. 18, 1997, 9-033749
Int. Cl. H04B *7/216;* **H04L** *12/50;* **H04J** *3/06*
U.S. Cl. 370—535 **6 Claims**

1. A multiplex transmission method comprising the steps of:

transmitting a plurality of digital signals having different frame lengths and bit-synchronized at the same signal rate upon multiplexing the signals in a predetermined order, comprising transmitting one digital signal including a predetermined sync pattern and at least one digital signal which does not include the predetermined sync pattern upon multiplexing the signals;



demultiplexing a received multiplexed signal;

detecting a predetermined sync pattern from each digital signal obtained by demultiplexing, comprising detecting the sync pattern from a digital signal output from a predetermined output position, and sequentially changing the output positions of the digital signals until the sync pattern is detected when the sync pattern is not detected within a predetermined period of time; and

determining an output position of each digital signal on the basis of the sync pattern detection result, comprising holding the output position of the digital signal when the sync pattern is detected.

US 6,331,990 B1

DEMODULATING AND AMPLIFYING SYSTEMS OF LASERS WITH OPTICAL GAIN CONTROL (DAS-LOGIC)

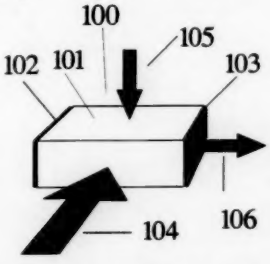
Michael A. Parker, Liverpool; Douglas B. Shire, and Chung L. Tang, both of Ithaca, all of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 1, 1999, Appl. No. 240,830

This patent is subject to a terminal disclaimer.

Int. Cl. H01S *3/30*

U.S. Cl. 372—8 **14 Claims**



1. Apparatus to manipulate the optical properties of light comprising:

at least one fist source of stimulated optical emission emitting an output beam;

at least one second source of optical emission emitting a control beam;

structure permitting said control beam to interact with said output beam, whereby said output beam is modulated; and

said apparatus performing at least one signal transformation chosen from the group consisting of FM demodulation, wavelength conversion, storage, signal amplification, regeneration, signal routing, transmission mode switching whether synchronous or asynchronous, packet switching, multiplexing, wavelength filtering, bistable switching, FM discrimination, and optical amplification.

US 6,331,991 B1

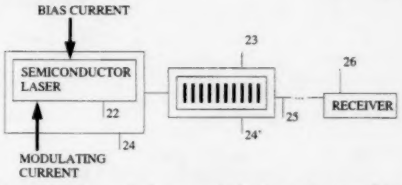
TRANSMISSION SYSTEM USING A SEMICONDUCTOR LASER AND A FIBER GRATING DISCRIMINATOR

Daniel Mahgerefteh, Washington, D.C., assignor to The United States of America as represented by the National Security Agency, Washington, D.C.

Provisional application No. 60/093,189, filed on Jul. 17, 1998, Provisional application No. 60/128,096, filed on Apr. 7, 1999. This application Jul. 15, 1999, Appl. No. 354,107.

Int. Cl. H01S *3/10;3/13;3/00;3/04;* **G02B** *6/28;6/34*

U.S. Cl. 372—33 **17 Claims**



9. A device for producing an optical pulse train, comprising:

(a) a laser, having a first input for biasing the laser, having an second input for modulating the laser, having an output, where the first input receives a bias current that biases the laser to a user-definable point significantly above the threshold at which the laser lases, where the second input receives a modulation signal that modulates the output of the laser to a modulation depth in the range of from 20% to 40%, and where the modulation signal is selected from the group of modulation signal consisting of a modulating current, an optical signal, an RF signal, a modulating data current, NRZ data, RZ data, a sinusoidal current, and a coded sinusoidal current;

(b) an optical isolator, having an input connected to the output of the laser, and having an output;

(c) a filter with a step-like spectrum, having an input connected to the output of the optical circulator; and having an output; and

(d) a temperature controller around the laser and the filter.

US 6,331,992 B1

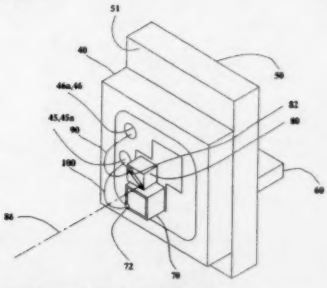
SMALL FORMAT OPTICAL SUBASSEMBLY

Patrick B. Gilliland, Chicago; Carlos Jines, Forest Park, and Theodore Washburn, Barrington, all of Ill., assignors to Stratos Lightwave, Inc., Chicago, Ill.

Filed Apr. 7, 2000, Appl. No. 545,087

Int. Cl. H01S *3/19*

U.S. Cl. 372—50 **44 Claims**



1. An optoelectronic package comprising:

a non-electrically conductive substrate having a first surface and a second surface, the first surface separated from the second surface by a thickness of the non-electrically conductive substrate, the first surface having a first region, a second region, and a third region, the first region having a first through-hole extending through the thickness, the second region having a second through-hole extending through the thickness and a

third through-hole extending through the thickness, the first region being separated from the third region by the second region;

an electrically conductive plating substantially covering both the first region and the third region of the first surface;

an electrically conductive material substantially filling the first through-hole so as to form a first electrically conductive via, the electrically conductive material substantially filling the second through-hole so as to form a second electrically conductive via, and the electrically conductive material substantially filling the third through-hole so as to form a third electrically conductive via, and the electrically conductive planing substantially covering the first region being electrically connected to the electrically conductive material substantially filling the first through-hole;

an optical diode having a first lead and a second lead, the first lead of the optical diode electrically connected to the electrically conductive plating of the first region, the first lead of the optical diode electrically connected to the first electrically conductive via, the second lead of the optical diode electrically connected to the second electrically conductive via, the optical diode having an optical axis;

a monitor diode having a third lead and a fourth lead, the third lead of the monitor diode electrically connected to the electrically conductive plating of the first region, the third lead of the monitor diode electrically connected to the first electrically conductive via, the fourth lead of the monitor diode electrically connected to the third electrically conductive via;

an electrically conductive can having a first aperture and a second aperture; and

a transparent element mounted on and sealed to the first aperture of the electrically conductive can, and wherein

the second aperture of the electrically conductive can is mounted on and sealed to the electrically conductive plating adhered to the third region of the non-electrically conductive substrate so as to hermetically seal the monitor diode and the optical diode from an ambient atmosphere, and wherein

the first through-hole has a longitudinal axis, and wherein the longitudinal axis of the first through-hole passes through at least one of the optical diode and the monitor diode, and wherein

the optical axis of the optical diode passes through the transparent element, and whereby

a conductive substrate and posts are absent so as to reduce a size of the optoelectronic package.

US 6,331,993 B1

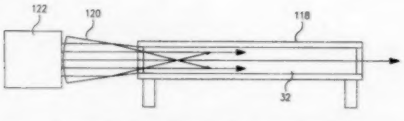
DIODE-PUMPED GAS LASERS

David C. Brown, R.R. #1, Box 356J, Brackney, Pa. 18812

Provisional application No. 60/072,899, filed on Jan. 28, 1998. This application Jan. 28, 1999, Appl. No. 238,450.

Int. Cl. H01S *3/22*

U.S. Cl. 372—55 **27 Claims**



1. An end-pumped diode-pumped gas laser comprising:

a source of optical diode-pumping light, the diode-pumping light having a bandwidth defining a center wavelength;

a gas cell having a first optical window for receiving the diode-pumping light and a second optical window for transmitting a laser light having a wavelength;

a laser gas disposed within the gas cell, the laser gas comprising a lasing gas having at least one absorbing and lasing atomic or molecular gas having an optical absorption band, the bandwidth of the diode-pumping light at least partially overlapping the absorption band of the lasing gas;

gas laser resonator means for providing an output laser beam having one or more laser wavelengths, the gas laser resonator means having a fundamental TEM_{00} mode volume distribution;

diode optics means for directing the diode-pumping light through the first optical window, the diode optic means being adapted and configured to couple the diode-pumping light directly into the lowest order fundamental TEM_{00} mode of the gas laser resonator means; and

a heat power regulation system for regulating the temperature of the source of optical diode-pumping light.

US 6,331,994 B1

EXCIMER LASER OSCILLATION APPARATUS AND METHOD, EXCIMER LASER EXPOSURE APPARATUS, AND LASER TUBE

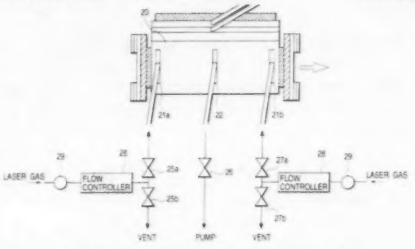
Tadahiro Ohmi, 1-17-301, Komegafukuro 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken; Nobuyoshi Tanaka, Tokyo, and Masaki Hirayama, Sendai, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, and Tadahiro Ohmi, Sendai, both of Japan

Filed Jul. 16, 1997, Appl. No. 893,977

Claims priority, application Japan, Jul. 19, 1996, 8-208817; Jul. 22, 1996, 8-212059; Aug. 12, 1996, 8-212923; Oct. 4, 1996, 8-264912; Jan. 17, 1997, 9-006441; Apr. 15, 1997, 9-097648

Int. Cl. H01S *3/097*

U.S. Cl. 372—82 **137 Claims**



1. An excimer laser oscillation apparatus comprising:

laser gas means which stores a laser gas comprising at least one inert gas selected from the group consisting of Kr, Ar, Ne, and F_2 gas;

an optical resonator which is made up of a pair of reflection optical parts arranged to sandwich said laser gas means therebetween; and

microwave traveling means functionally coupled to said laser gas means, for exciting the laser gas in said laser gas means, wherein said laser gas means is arranged outside of said microwave traveling means.

US 6,331,995 B2

GAS LASER OSCILLATOR

Hiroyuki Hayashikawa, Toyonaka; Satoshi Eguchi, Takatsuki, and Takayuki Yamashita, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of application No. 09/120,886, filed on Jul. 23, 1998. This application Apr. 30, 2001, Appl. No. 843,747.

Claims priority, application Japan, Jul. 30, 1997, 9-203669; Aug. 5, 1997, 9-210669; Aug. 5, 1997, P9-210672

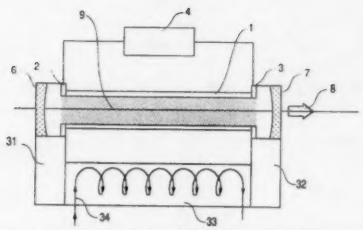
Int. Cl. H01S *3/08;3/04*

U.S. Cl. 372—107 **2 Claims**

1. A gas laser oscillator comprising:

(a) discharge tubes disposed along the optical axis of laser beam for forming a discharge space inside,

(b) a fully reflective mirror disposed toward one opening of said discharge space for composing a terminal mirror,



(c) a partially reflective mirror disposed toward other opening of said discharge space for composing an output mirror,

(d) a first flange for holding said fully reflective mirror,

(e) a second flange for holding said partially reflective mirror, and

(f) a support element, being a member for keeping parallelism between said fully reflective mirror and said partially reflective mirror by coupling said first flange and said second flange, and having a spiral medium passage for passing cooling medium disposed inside thereof.

US 6,331,996 B1

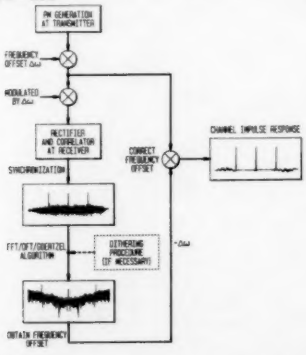
CHANNEL SYNCHRONIZATION AND IMPULSE SOUNDING IN THE PRESENCE OF FREQUENCY OFFSET

Jenn-Shing Lin, Freehold; Richard Rogoszewicz, Voorhees, and Jin-Der Wang, Ocean City, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 28, 1998, Appl. No. 86,197

Int. Cl. H04L *27/30; 7/00*

U.S. Cl. 375—130 **14 Claims**



1. A method of achieving symbol rate synchronization incident to ascertaining a channel's impulse response, comprising the steps of:

a) receiving over said channel signals containing a training sequence of known, pseudo random binary symbols (PN);

b) correlating said sequence received over said channel with a sequence (PN^{-1}) modified by mapping the zeros of said known sequence (PN) to −1; and

c) taking a transform of the received correlated signals to obtain tones indicative of the amount of offset in synchronization.

US 6,331,997 B1

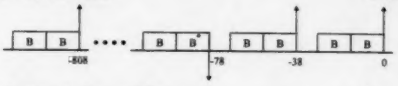
SCHEME FOR SPREAD SPECTRUM MULTIPLE ACCESS CODING

Daoben Li, Beijing, China, assignor to Linkair Communication, Inc., San Jose, Calif.

Continuation of application No. PCT/CN98/00151, filed on Aug. 4, 1998. This application Feb. 10, 2000, Appl. No. 501,666.

Int. Cl. H04L *27/30;* **H04K** *1/30;* **H04B** *15/00*

U.S. Cl. 375—130 **15 Claims**



14. A method comprising:

generating a plurality of pulses having polarity and a plurality of different time intervals between successive pulses;

generating a plurality of codewords from the plurality of pulses using the polarity of each pulse, and

spread-spectrum processing each pulse by a pulse compression code.

US 6,331,998 B1

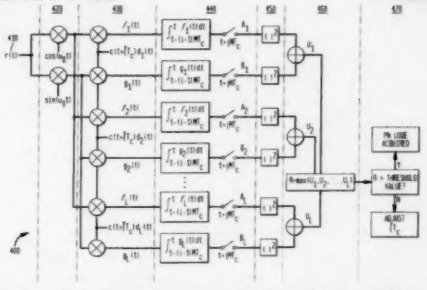
PARTIALLY MATCHED FILTER FOR SPREAD SPECTRUM COMMUNICATION

Wen-Chang Lin, Hsinchu, and Yu T. Su, Chi-Yi, both of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Aug. 28, 1998, Appl. No. 143,180

Int. Cl. H04B *15/00*

U.S. Cl. 375—143 **10 Claims**



1. A method of acquiring a transmitted pseudo noise (PN) code c(t) from a received signal r(t) that is data modulated, said transmitted PN code c(t) having a first PN code phase, the method comprising the steps of:

(a) multiplying the received signal r(t) by each of a plurality of signals, wherein each of said plurality of signals is the PN code c(t), having a second PN code phase, as modulated by one of a plurality of data signals, and wherein a portion of said received signal r(t) is utilized over an interval MT_c, wherein said interval MT_c is selected to have a maximum of Q data signal transition and a maximum of L different data patterns, wherein

$$L=C_0^{2Q}+C_1^{2Q}+\ldots+C_Q^{2Q}$$

and

$$C_y^x=\frac{x!}{y!(x-y)!};$$

wherein M is integer, T_c is a chip time of a pseudo noise (PN) code, x and y are positive integer and x>y;

(b) integrating the result of each multiplication to produce a plurality of integration results;

(c) squaring each of said plurality of integration results to produce a plurality of square values; and

(d) comparing each one of said plurality of square values to a threshold value to determine if said first PN code phase equals said second PN code phase.

US 6,331,999 B1

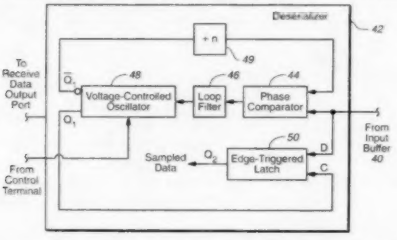
SERIAL DATA TRANSCEIVER ARCHITECTURE AND TEST METHOD FOR MEASURING THE AMOUNT OF JITTER WITHIN A SERIAL DATA STREAM

Francois Ducaroir, Santa Clara; Karl S. Nakamura, Palo Alto, and Michael O. Jenkins, San Jose, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jan. 15, 1998, Appl. No. 7,490

Int. Cl. H04B *3/46*

U.S. Cl. 375—226 **14 Claims**



1. A serial data transceiver formed upon a monolithic semiconductor substrate, said transceiver including a receiver comprising:

a deserializer coupled to receive a serial data stream comprising data windows separated by data transition periods, wherein the serial data stream has sufficient timing information to recover a transmit clock signal therefrom, and wherein the deserializer is configured to sample the serial data stream within each data window dependent upon the duty cycle of a timing signal in order to recover data from the serial data stream, and wherein the deserializer comprises:

a phase comparator coupled to receive the serial data stream and the transmit clock signal, wherein the phase comparator is configured to produce an a.c. error signal having a short term average value substantially proportional to the phase difference between the serial data stream and the transmit clock signal;

a loop filter coupled to receive the a.c. error signal and configured to produce a filtered error signal which is substantially the short term average value of the a.c. error signal;

a voltage-controlled oscillator (VCO) coupled to receive the filtered error signal and a control signal, wherein the VCO is configured to produce a clock signal, and wherein the frequency of the clock signal is dependent upon the filtered error signal and substantially equal to a number n times a frequency of the transmit clock signal, and wherein the VCO is configured to produce the timing signal, and wherein the duty cycle of the timing signal is dependent upon the value of the control signal; and

a divide-by-n circuit coupled to receive the clock signal and configured to divide the frequency of the transmit clock signal by the number n to produce the transmit clock signal, wherein n is an integer greater than or equal to 1, wherein

the VCO comprises a ramp generator coupled to a Schmitt trigger circuit, and wherein the ramp generator produces an output voltage which alternately increases and decreases linearly with time, and wherein the Schmitt trigger circuit is configured to produce the clock signal and the timing signal in response to the ramp generator output voltage.

US 6,332,000 B1

TIME DIVISION EQUALIZER USING SYSTEM CLOCK SIGNAL FASTER THAN SYMBOL CLOCK SIGNAL IN HIGH-SPEED COMMUNICATION

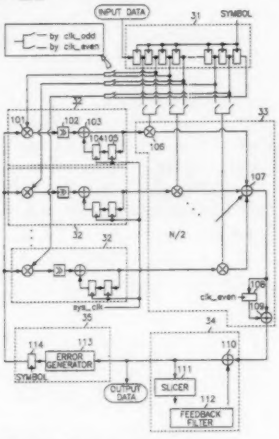
Duck Myung Lee, Ichon-shi, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed May 7, 1998, Appl. No. 74,436

Claims priority, application Rep. of Korea, May 8, 1997, 97-17725

Int. Cl. H03H *7/40*

U.S. Cl. 375—232 **11 Claims**



1. An adaptive equalizer comprising:

a plurality of first delaying means for delaying input data in response to a symbol clock signal;

a clock generating means receiving a system clock signal for producing a plurality of control signals using the system clock signal which is faster than the symbol clock signal, for classifying the delayed data;

a plurality of selecting means for selecting output data from the first delaying means in response to the control signals provided by the clock generating means;

a plurality of coefficient value updating means for receiving a previous error value and alternatively receiving the delayed and selected input data and then updating a coefficient value in response to the system clock signal;

a convolutional operating means for receiving outputs of the coefficient value updating means and alternatively receiving the delayed and selected input data; and

an error value generating means for calculating an error value from an output of the convolutional operating means and providing the calculated error to the plurality of coefficient value updating means.

US 6,332,001 B1

METHOD OF CODING IMAGE DATA

Akifumi Arayashiki; Ouichi Oyamada, and Shin-Ichi Hirata, all of Sapporo, Japan, assignors to Kokusai Electric Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1998, Appl. No. 20,406

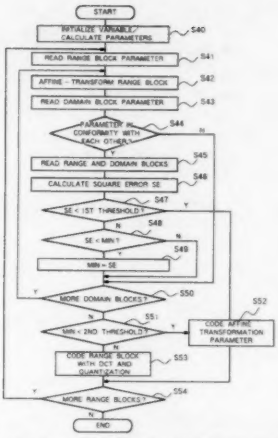
Claims priority, application Japan, Feb. 10, 1997, 9-041696; Jan. 23, 1998, 10-026692

Int. Cl. H04N *7/12*

U.S. Cl. 375—240 **4 Claims**

1. A method of coding a moving image according to a motion-compensated interframe coding process, said method comprising:

calculating feature parameters which characterize an input block of plural pixels in a frame to be coded and a block of plural pixels from another frame, wherein said feature parameter of the input block is based only on pixel values of the plural



pixels in the input block and said feature parameter of the block from said another frame is based only on pixel values of the plural pixels in the block from said another frame;

comparing said feature parameters with each other to seek a block similar to the input block from said another frame without conducting a pixel-by-pixel comparison of all of the pixels in the input block and the block;

calculating an error between the pixel values of the plural pixels of the input block and the block similar to the input block which has been sought; and

coding a motion vector between the input block and the block similar to the input block whose calculated error is smallest in a search range.

US 6,332,002 B1

MOTION PREDICTION APPARATUS AND METHOD

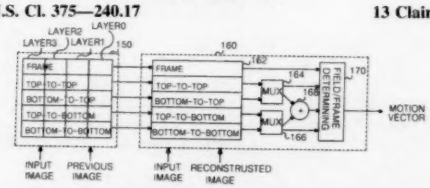
Kyoung Won Lim, Seoul, and Hee Sub Lee, Kyunggi-do, both of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Oct. 30, 1998, Appl. No. 182,203

Claims priority, application Rep. of Korea, Nov. 1, 1997, 97-57611; Nov. 1, 1997, 97-57612

Int. Cl. H04N *7/12*

U.S. Cl. 375—240.17 **13 Claims**



1. A motion prediction apparatus, comprising:

coding means connected to an input line for coding an input image;

decoding means connected to the coding means for decoding the coded image signal; and

first motion estimating means connected commonly to the input line and the decoding means for retrieving a motion in a single pixel unit repeatedly in accordance with a position information detected dependently at m layers with respect to the input image and for generating a second position information at the (m−1) numbered layer;

second motion estimating means connected commonly to the decoding means and the first motion estimating means for estimating a motion in a single pixel unit with respect to a decoded reconstructed image at the m numbered layer in accordance with the second position information to generate a third position information, said m being an integer; and

third motion estimating means connected commonly to the second motion estimating means and the decoding means for estimating a motion in a half pixel unit with respect to the decoded reconstructed image at the m numbered layer in accordance with the third position information, wherein the decoded reconstructed image is loaded once and used by both the second and third motion estimating means.

US 6,332,003 B1

MOVING IMAGE COMPOSING SYSTEM

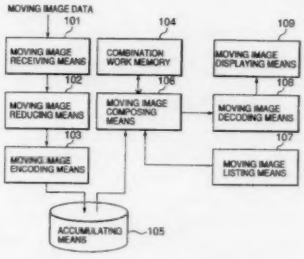
Shun Matsuura, Tokyo; Satoshi Kageyu, Fujisawa; Hitoshi Kato, Tokyo; Kayoko Asai, Tokyo; Hiroaki Yoshio, Tokyo; Tsuyoshi Kato, Tokyo; Yoshihiro Hayakawa, Yokohama, and Kensuke Maruya, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 12, 1998, Appl. No. 189,868

Claims priority, application Japan, Nov. 11, 1997, 9-308387; Oct. 28, 1998, 10-321375

Int. Cl. H04N *7/12*

U.S. Cl. 375—240.23 **36 Claims**



1. A moving image composing system comprising:

moving image receiving means for receiving a moving image;

moving image reducing means for reducing said moving image to produce a reduced moving image;

moving image encoding means for encoding said reduced moving image to produce an encoded moving image;

accumulating means for storing and accumulating said encoded moving image;

moving image composing means for combining at least one encoded moving image accumulated in said accumulating means into a multi-image combined moving image;

moving image decoding means for decoding said multi-image combined moving image; and

moving image displaying means for displaying the decoded moving image,

wherein said moving image encoding means conducts the encoding on the basis of positional information said reduced moving image has to facilitate a change of said positional information in consideration with a case that a variation of said positional information occurs due to a disposition of said reduced moving image at the moving image combination, and

said moving image composing means changes said positional information to positional information required for its combining processing when a need for the change of the positional information said reduced moving image has takes place.

US 6,332,004 B1

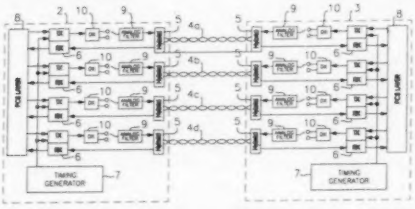
ANALOG DISCRETE-TIME FILTERING FOR UNSHIELDED TWISTED PAIR DATA COMMUNICATION

Kevin T. Chan, Pasadena, Calif., assignor to Broadcom Corporation, Irvine, Calif.

Provisional application No. 60/108,001, filed on Nov. 11, 1998, Provisional application No. 60/107,702, filed on Nov. 9, 1998, Provisional application No. 60/107,105, filed on Nov. 4, 1998, Provisional application No. 60/106,265, filed on Oct. 30, 1998. This application Oct. 29, 1999, Appl. No. 429,892.

Int. Cl. H04B *3/00;* **H04L** *25/00;25/36;25/03;25/49*

U.S. Cl. 375—257 **12 Claims**



1. An analog discrete-time filter integrated with a digital-to-analog converter for use in a current-mode transmission line driver having an output to provide electromagnetic interference emission reduction, said analog filter comprising:

an output cell for creating a current-mode differential output signal responsive to a plurality of digitized input data samples;

a timing circuit for generating a timing signal to divide each digitized input data sample into a first time segment and a second time segment; and

a control circuit electrically coupled to the output cell for generating control signals to drive the output cell to produce a portion of the current-mode differential output signal for duration of the first time segment and produce the full current-mode differential output signal for duration of the second time segment.

US 6,332,005 B1

METHOD FOR CONVERTING A SIGNAL DATA RATE, AND A TRANSMITTER

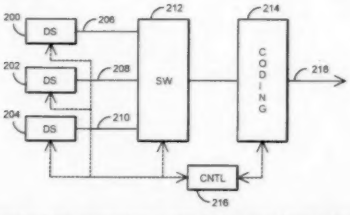
Kari Pehkonen, Oulu, Finland, assignor to Nokia Mobile Phones Limited, Espoo, Finland

Filed Oct. 22, 1998, Appl. No. 177,246

Claims priority, application Finland, Oct. 24, 1997, 974052

Int. Cl. H04L *27/01*

U.S. Cl. 375—259 **17 Claims**



1. A method for converting a signal data rate from a lower data rate to a higher data rate in a digital data transmission system, the method comprising the steps of

A1) transmitting a signal by using frames of a given length, which length corresponds to the higher data rate,

B1) grouping the signal to a first block the length of which corresponds to the lower data rate,

C1) subjecting symbols to be transmitted to repetition coding,

D1) calculating the number of symbols missing from the frame by subtracting from the frame length the number of symbols in the first block, and if the number of the missing symbols is greater than one,

E1) repeating every ith symbol of the first block, i being determined as the nearest bigger or an equal integer when the number of symbols in the first block is divided by the number of symbols missing from the frame,

F1) updating the first block by removing therefrom the symbols that have been repeated,

G1) updating the number of symbols missing from the frame by subtracting therefrom the number of the symbols that have been repeated, and if the number of the missing symbols is greater than one,

H1) proceeding to step E1).

US 6,332,006 B1

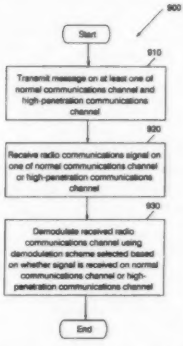
APPARATUS AND METHODS FOR PROVIDING HIGH-PENETRATION MESSAGING IN WIRELESS COMMUNICATIONS SYSTEMS

Nils Rydbeck; Barbara Molnar, both of Cary; Jiann-Ching Guey, Durham; Ali Khayrallah, and R. David Koilpillai, both of Apex, all of N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Nov. 18, 1998, Appl. No. 195,790

Int. Cl. H04B *1/02;1/22;7/216;1/69;* **H04J** *13/02*

U.S. Cl. 375—262 **69 Claims**


900
Start
910
Transmit message on at least one of normal communications channel and high-penetration communications channel
920
Receive radio communications signal on one of normal communications channel or high-penetration communications channel
930
Demodulate received radio communications channel using demodulation scheme selected based on whether signal is received on normal communications channel or high-penetration communications channel
End

1. In a wireless communications system including at least one base station operative to serve a plurality of subscriber units, a method of communicating comprising the steps of:

transmitting a message on at least one of a first communications channel having a first redundancy level or a second communications channel having a second redundancy level greater than the first redundancy level; and

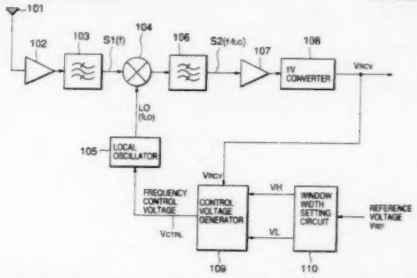
receiving a radio communications signal on one of the first communications channel and the second communications channel; and

demodulating the received radio communications signal to recover the message using a first demodulation scheme if the radio communications signal is received on the first communications channel and using a second demodulation scheme if the radio communications signal is received on the second communications channel, wherein said step of demodulating comprises the step of coherently demodulating the received radio communications signal if the radio communications signal is received over the first communications channel and non-coherently demodulating the received radio communications signal if the radio communications signal is received over the second communications channel.

US 6,332,007 B1
AUTOMATIC FREQUENCY CONTROL IN FSK RECEIVER USING VOLTAGE WINDOW DEVIATION

Teruo Sasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 14, 1998, Appl. No. 210,538
Claims priority, application Japan, Dec. 12, 1997, 9-362623
Int. Cl. H04L *27/16*
U.S. Cl. 375—344 **33 Claims**



1. An automatic frequency control circuit for controlling an oscillation frequency of a local oscillator provided in an FSK (frequency shift keying) signal receiver, comprising:

a converter for converting a frequency of an FSK signal to a received signal voltage varying depending on the frequency of the FSK signal;

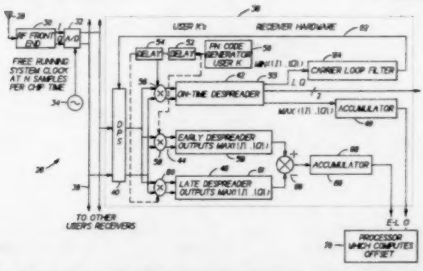
a window generator for generating a voltage window including a reference voltage corresponding to a center frequency of the FSK signal; and

a controller for changing the oscillation frequency of the local oscillator whenever the received signal voltage deviates outside of the voltage window, such that the received signal voltage returns back into the voltage window.

US 6,332,008 B1
SYNCHRONIZER AND METHOD THEREFOR AND COMMUNICATIONS SYSTEM INCORPORATING SAME

Thomas R Giallorenzi, Herriman; Samuel C Kingston, Salt Lake City; Robert W Steagall, North Salt Lake; Patrick J Smith, Salt Lake City, and Steven T Barham, Taylorsville, all of Utah, assignors to L-3 Communications Corporation, New York, N.Y.

Division of application No. 08/872,398, filed on Jun. 10, 1997, now Pat. No. 5,867,525. This application Oct. 13, 1998, Appl. No. 170,018.
Int. Cl. H04L *7/00*
U.S. Cl. 375—356 **17 Claims**



1. Apparatus for determining an offset of a spread spectrum signal spread with a pseudonoise code, comprising:

a pseudonoise code generator for generating the pseudonoise code;

delay means, receiving the pseudonoise code from said pseudonoise code generator, for generating a first plurality of delayed pseudonoise codes each delayed by a different amount;

a first despreading means receiving the spread spectrum signal and receiving the pseudonoise code from said pseudonoise code generator, for producing a first despread signal;

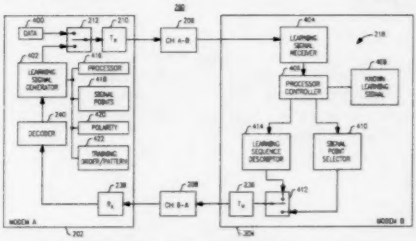
a first plurality of despreading means, each of said first plurality of despreading means receiving the spread spectrum signal and receiving a respective one of said first plurality of delayed pseudonoise codes for producing a first plurality of despread signals; and

a processor, receiving the first despread signal and the first plurality of despread signals, for combining the despread signals to produce an offset signal.

US 6,332,009 B2
METHOD AND APPARATUS FOR GENERATING A LINE IMPAIRMENT LEARNING SIGNAL FOR A DATA COMMUNICATION SYSTEM

Sverrir Olafsson, Reykjavik, Iceland, assignor to Conexant Systems, Inc., Newport Beach, Calif.

Continuation-in-part of application No. 08/922,851, filed on Sep. 3, 1997. This application Nov. 13, 1997, Appl. No. 969,971.
Int. Cl. H04L *7/00*
U.S. Cl. 375—358 **129 Claims**



104. An impairment learning method for use over a communication channel, said method comprising:

receiving a learning signal over said communication channel, said learning signal having a plurality of first data points selected from a signal point constellation;

performing an impairment analysis of said communication channel, wherein said performing includes analyzing characteristics of said learning signal and determining a plurality of second data points on a point-by-point basis; and

transmitting information indicative of said second data points over said communication channel;

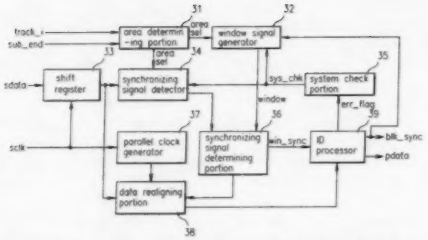
wherein said learning signal comprises a number of segments, each of said segments comprising a sequence of symbols, and each of said segments contains a training symbol utilized for determining said second data points.

US 6,332,010 B1
SYNCHRONIZING SIGNAL DETECTING CIRCUIT

Doo Hee Lee, Kyungki-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Aug. 28, 1998, Appl. No. 141,607
Claims priority, application Rep. of Korea, Aug. 29, 1997, 97-42891
Int. Cl. H04L *7/00*
U.S. Cl. 375—368 **33 Claims**

7. A synchronizing signal detecting circuit for detecting a synchronizing signal from reproduced data having a sub code area and a main data area during reproducing data recorded in recording media, the synchronizing signal detecting circuit comprising:



an area determining portion for determining the sub code area and the main data area in an input reproduced data;

a system check portion for determining a system state based on results of error correction of the input reproduced data;

a synchronizing signal detector for determining a matching degree based on a system check signal output from the system check portion, the matching degree indicating a degree that the input reproduced data should match the preset synchronizing pattern and detecting a synchronizing signal from input reproduced data in response to the determined matching degree;

a window signal generator for generating a window area based on output of the area determining portion; and

a synchronizing signal determining portion for verifying a synchronizing signal only if the synchronizing signal detected by the synchronizing signal detector is within the generated window area; and

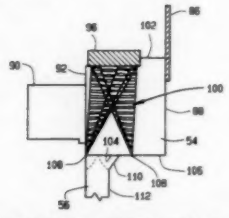
an ID processor for detecting an ID signal, performing error correction, outputting a number of error flags resulting from the error correction to the system check portion, and acknowledging the verified synchronizing signal output from the synchronizing signal determining portion only if the ID signal is accurately detected.

US 6,332,011 B1

ULTRASONIC EXAMINATION OF SHROUD WELD FROM TOP OF SHROUD FLANGE RING

Paul Johnson, Iron Station, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 2000, Appl. No. 510,404
Int. Cl. G21C *17/003*
U.S. Cl. 376—249 **20 Claims**



1. A method of scanning a shroud weld in a nuclear reactor pressure vessel, the reactor pressure vessel comprising a shroud comprising an upper shroud section and a shroud head flange welded to one end of the upper shroud section, said method comprising the steps of:

positioning a phased array ultrasonic probe on an upper surface of the shroud head flange;

emitting an ultrasonic beam from the ultrasonic probe;

electronically steering the ultrasonic beam to scan a weld joining the shroud head flange and the upper shroud section, the beam moving from an outer surface of the shroud head flange toward an inner surface of the shroud head flange; and

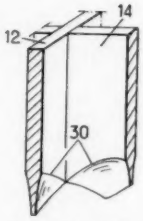
acquiring scan data over a length of the scan.

US 6,332,012 B1

GRID STRAP FOR A NUCLEAR FUEL ASSEMBLY, AND A GRID INCLUDING SUCH STRAPS

Bernard Petit, Brignais, France, assignor to Framatome, and Compagnie Generale des Matieres Nucleaires, both of France

Filed Jul. 10, 1998, Appl. No. 113,298
Claims priority, application France, Jul. 11, 1997, 97 08874
Int. Cl. G21C *3/18*
U.S. Cl. 376—442 **9 Claims**



1. In a nuclear fuel assembly grid including a plurality of mutually interleaved flat straps forming an array of fuel rod receiving cells, a strap formed with slots regularly distributed along an elongate direction of the plate for interleaving with other straps of the grid, said strap having dimples located between some at least of said slots for maintaining fuel rods in said cells, wherein:

said strap has an upstream portion extending in said elongate direction and in transverse relation to a coolant flow direction in the grid, said upstream portion having an upstream edge interrupted by said slots and having a concave chamfer extending from said upstream edge of the strap on each side thereof along the whole length of said upstream edge,

each said chamfer has a length in the direction of flow which varies from a maximum value half-way between two successive said slots and a minimum value in the vicinity of the slots, and

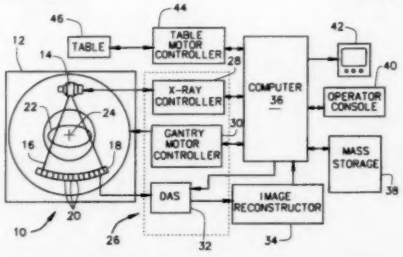
said upstream edge has a thickness which is minimum midway between said two successive slots.

US 6,332,013 B1

METHODS AND APPARATUS FOR TILTED HELICAL RECONSTRUCTION MULTISLICE CT

Jiang Hsieh, Brookfield, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 28, 1999, Appl. No. 473,341
Int. Cl. A61B *6/03*
U.S. Cl. 378—15 **18 Claims**



1. A method for filtering projection data of a computed tomographic scan of an object; said method comprising the steps of:

acquiring projection data representing a tilted, helical scan of an object;

zero padding the acquired projection data;

determining a Fourier transform of the zero padded projection data;

determining a product of the Fourier transform of the zero padded projection data, a ramp function and a phase shift function; and

determining an inverse Fourier transform of the product of the Fourier transform, the ramp function, and the phase shift function as filtered projection data.

US 6,332,014 B1

METHOD OF IMPROVING THE QUALITY OF A FLUOROSCOPIC IMAGE

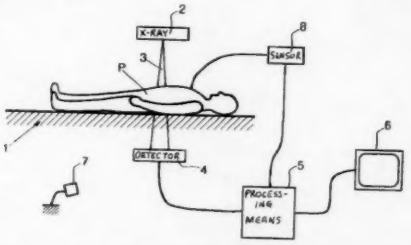
Vladislav Boutenko, Boulogne Billancourt; Bernard Callier, Voisins-le-Bretonneux; Huburt Hacquard, Bièvres, and François Kotian, Bois d'Arcy, all of France, assignors to GE Medical Systems S.A., France

Filed Oct. 8, 1999, Appl. No. 415,156

Claims priority, application France, Aug. 31, 1998, 98 10876

Int. Cl. A61B *6/00*

U.S. Cl. 378—95 **12 Claims**



1. A method for improving the quality of a fluoroscopic image obtained by transmitting X-rays at a preselected level through an object with the image being displayed as a sequence of images, the method comprising the steps of:

processing the sequence of images to identify an image out of the sequence of images which satisfies a predetermined minimum motion criterion;

storing the identified image; and

continuously displaying the stored image.

US 6,332,015 B1

RADIOGRAPHIC DIAGNOSIS APPARATUS, RADIOGRAPHIC DIAGNOSIS METHOD, PLATE MEMBER, AND POSITION DETECTING METHOD

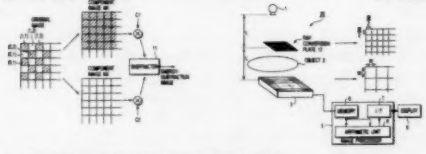
Michitaka Honda, Yaita, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 16, 1999, Appl. No. 441,056

Claims priority, application Japan, Nov. 17, 1998, 10-326993

Int. Cl. A61B *6/00*

U.S. Cl. 378—98.11 **24 Claims**



1. A radiographic apparatus comprising:

a radiation source configured to irradiate an object with radiation;

a detector comprising a plurality of detecting elements configured to detect the radiation generated by said radiation source and transmitted through the object; and

a ray conversion plate detachably attached to the detection surface of the detector and comprising a plurality of different types of attenuating elements for attenuating radiation at different attenuation ratios,

wherein radiations differing in energy attenuated by said plurality of different types of attenuating elements are detected by said detecting elements respectively corresponding to said attenuating elements and each of said detecting elements and each of said attenuating elements have substantially equal areas.

US 6,332,016 B1

PHOTOELECTRIC CONVERSION DEVICE, MANUFACTURING METHOD THEREOF, AND X-RAY IMAGING SYSTEM INCLUDING THE DEVICE

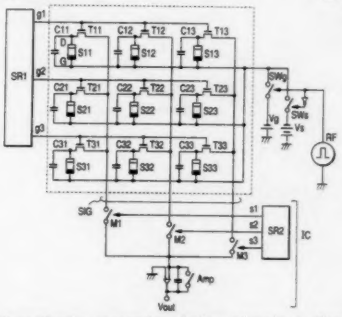
Isao Kobayashi, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1999, Appl. No. 362,050

Claims priority, application Japan, Jul. 30, 1998, 10-215853

Int. Cl. H05G *1/64*

U.S. Cl. 378—98.2 **10 Claims**



1. A photoelectric conversion device wherein a plurality of sensor cells, in each of which a photoelectric element and a switching element are connected, are arrayed in two dimensions on a substrate, said switching element of at least one of said sensor cells having been removed.

US 6,332,017 B1

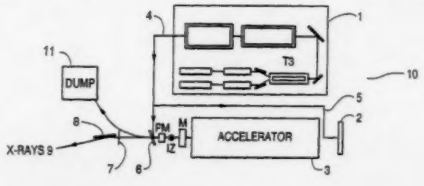
SYSTEM AND METHOD FOR PRODUCING PULSED MONOCHROMATIC X-RAYS

Frank E. Carroll; Robert H. Traeger; Marcus H. Mendenhall; James W. Waters; Glenn Edwards, and Charles A. Brau, all of Nashville, Tenn., assignors to Vanderbilt University, Nashville, Tenn.

Filed Jan. 21, 2000, Appl. No. 488,898

Int. Cl. H01J *35/14*

U.S. Cl. 378—119 **28 Claims**



1. A system for generating X-rays, comprising:

an electron beam source for directing a pulse of electrons having a pre-determined electron pulse length at a beam collision point in a beam interaction zone; and

a laser beam source for directing an optical pulse of photons at the beam collision point, wherein

the electrons in the electron pulse collide with the photons in the optical pulse at the beam collision point, the collision thereby converting at least some of the photons into a single pulse of approximately monochromatic X-ray photons,

and further wherein

pulse characteristics of the single X-ray pulse are independently configured relative to another pulse produced by the system.

US 6,332,018 B1

COMMUNICATION APPARATUS SELECTIVELY PREVENTING PRODUCTION OF A CALLERS VOICE

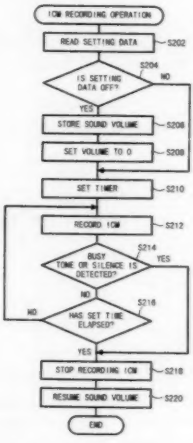
Kenichi Dan, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 26, 1998, Appl. No. 84,224

Claims priority, application Japan, May 26, 1997, 9-135536

Int. Cl. H04M *1/64;11/00*

U.S. Cl. 379—68 **20 Claims**



1. A communication apparatus, comprising:

a receiver unit that receives a voice signal from an external device through a communication path;

a recorder unit that records the voice signal received by the receiver unit;

a voice outputting unit that audibly outputs the voice signal received by the receiving unit;

a setting unit for selecting whether the voice signal received by the receiver unit is to be audibly output by the voice outputting unit while the voice signal is being recorded by the recorder unit; and

a silencing control unit that prevents the voice signal from being audibly output while the voice signal is being recorded by the recorder unit, based on the selection by the setting unit, and during playback of a previously recorded voice signal allows the previously recorded voice signal to be audibly output without changing the setting unit selection.

US 6,332,019 B1

TELECOMMUNICATIONS NETWORK WITH STORE FOR DATA ASSOCIATED WITH AN AREA CODE

Michael C Morley; Ian C. C Sturgess, and David S Gardner, all of Ipswich, United Kingdom, assignors to British Telecommunications public limited company, London, United Kingdom

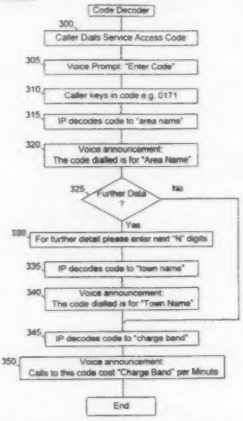
PCT No. PCT/GB97/00751, § 371 Date Mar. 24, 1998, § 102(e) Date Mar. 24, 1998, PCT Pub. No. WO97/36432, PCT Pub. Date Oct. 2, 1997

Continuation-in-part of application No. 08/680,922, filed on Jul. 16, 1996. This PCT application Mar. 18, 1997, Appl. No. 43,501.

Claims priority, application European Pat. Off., Mar. 27, 1996, 96302112

Int. Cl. H04M *1/64*

U.S. Cl. 379—88.23 **10 Claims**



1. A telecommunications network, comprising:

a switching unit supplied with digits of a telephone number entered by a calling customer;

a peripheral device coupled to the switching unit and including a data store storing geographic locations associated with telephone numbers or portions thereof, the peripheral device using the digits entered by the caller to access a geographic location in the data store corresponding to the entered digits and generating an audible description of the geographic location that is then supplied back to the calling customer.

US 6,332,020 B1

SYSTEM AND METHOD FOR DOWNLOADING INTERNET BASED INFORMATION TO AN ADSI PHONE SLOT

Andrew J. Mitchell, Rochester; Richard G. Bergman, Williamson, and Thomas J. Kredo, Rochester, all of N.Y., assignors to Nortel Networks Limited, Ottawa, Canada

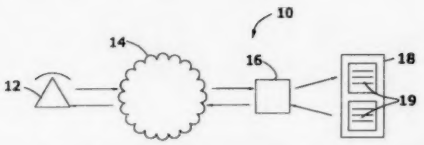
Continuation of application No. 09/137,331, filed on Aug. 20, 1998, now Pat. No. 6,108,406, which is a continuation-in-part of application No. 08/977,470, filed on Nov. 24, 1997, now Pat. No. 6,122,349, which is a continuation of application No. 08/901,763, filed on Jul. 29, 1997, now Pat. No. 5,923,738, which is a division of application No. 08/815,663, filed on Mar. 10, 1997, now Pat. No. 5,937,041. This application Aug. 7, 2000, Appl. No. 633,895.

This patent is subject to a terminal disclaimer.

Int. Cl. H04M *11/00*

U.S. Cl. 379—93.25 **14 Claims**

1. A system for downloading network information to a storage location in an ADSI telephone comprising:



an ADSI telephone, having one or more storage locations for receiving and storing downloaded ADSI files, for transmitting an ADSI download request, and for displaying the downloaded ADSI files;

a network application server connected to at least one or more remote sites of at least one or more computer networks, where the at least one remote site comprises at least one file in ADSI mergable data format, or a CGI script which can return such a file;

means for initiating a download of the file(s) to the ADSI telephone wherein the server accesses the file(s) stored on the remote site, incorporates the text information into an ADSI download template, and transfers the resulting file to the memory storage location in the ADSI telephone.

US 6,332,021 B2

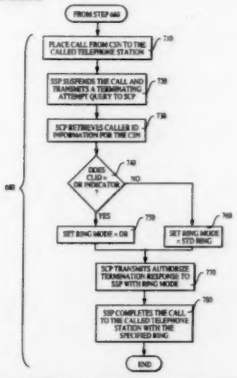
CONVENIENCE FEATURES IN A METHOD AND SYSTEM FOR PROVIDING ENHANCED CALLER IDENTIFICATION

Teresa Farias Latter, Kildeer; John Wesley Moss, Lake Zurich; Thomas Joseph McBlain, Arlington Heights; James Thomas Maciejewski, Spring Grove, and Mary Louise Hardzinski, Palatine, all of Ill., assignors to Ameritech Corporation, Hoffman Estates, Ill.

Continuation-in-part of application No. 09/122,484, filed on Jul. 24, 1998. This application Mar. 9, 1999, Appl. No. 264,611.

Int. Cl. H04M *1/56;15/06*

U.S. Cl. 379—142.01 **3 Claims**


FROM STEP 660
PLACE CALL FROM CSN TO THE CALLED TELEPHONE STATION
710
SSP SUSPENDS THE CALL AND TRANSMITS A TERMINATING ATTEMPT QUERY TO SCP
720
SCP RETRIEVES CALLER ID INFORMATION FOR THE CSN
730
DOES CLID + DR INDICATION ?
740
NO
YES
SET RING MODE = DR
750
SET RING MODE = STD RING
760
SCP TRANSMITS AUTHORIZE TERMINATION RESPONSE TO SSP WITH RING MODE
770
SSP COMPLETES THE CALL TO THE CALLED TELEPHONE STATION WITH THE SPECIFIED RING
780
END
660

1. A system for processing a call from a calling party at a calling communication station to a called communication station, the system comprising:

a service control point operative to determine whether standard caller identification information for the calling communication station can be provided to the called communication station;

network equipment coupled with the service control point, the network equipment being operative to transmit a request for audible caller identification information to the calling communication station in response to a determination that the standard caller identification information cannot be provided to the called communication station, and being operative to complete the call to the called communication station with a distinctive ring indicative of the audible caller identification information provided by the calling party.

US 6,332,022 B1

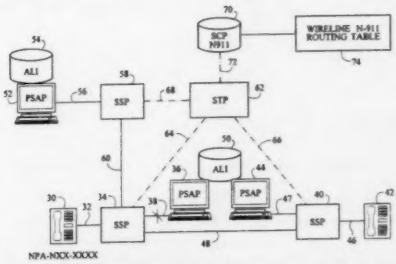
METHOD AND APPARATUS FOR ROUTING EMERGENCY SERVICES CALLS IN AN INTELLIGENT NETWORK

Edgar Martinez, Arlington Heights, Ill., assignor to Nortel Networks Limited, Ottawa, Canada

Filed Dec. 22, 1997, Appl. No. 995,917

Int. Cl. H04Q *7/00*

U.S. Cl. 379—220.01 **10 Claims**



1. A method of handling emergency services calls from calling parties in an intelligent network having a plurality of emergency services operator stations (PSAPs), at least one Service Control Point (SCP) equipped with software for providing service features and having access to databases including routing data for said plurality of emergency services operator stations and a plurality of Service Switching Points (SSP) equipped with call processing software having point-in-call triggers for interrupting processing of a call and exchanging signalling messages with the Service Control Point (SCP) to obtain instructions for further processing of the call, the Service Switching Points and Service Control Point (SCP) being interconnected by a data communication signalling system, the Service Switching Points being interconnected by trunks for calls therebetween, and the plurality of emergency services operator stations being each connected by trunks or lines to at least one of said Service Switching Points, the said routing data comprising routing numbers each identifying a network location for a respective one of said plurality of emergency services operator stations, the routing data associating with each calling party a primary emergency services operator station and at least one alternative emergency services operator station, the method comprising the steps of:

(i) at a particular Service Switching Point, presetting a point-in-call trigger to operate at a predetermined point in a call for emergency services,

(ii) subsequently, when said particular Service Switching Point is processing an emergency services call, interrupting processing of the call and transmitting to the Service Control Point (SCP) a query signalling message requesting routing information,

(iii) at the Service Control Point (SCP), upon receipt of the query signalling message, accessing said routing data in dependence upon parameters in the query signalling messages, and selecting a routing number corresponding to said alternative emergency services operator station for that calling party, forming a response signalling message including the selected routing number and returning such response signalling message to said particular Service Switching Point,

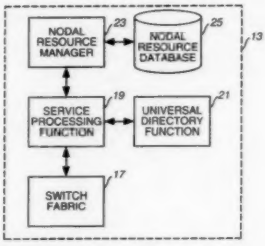
(iv) at said particular Service Switching Point, upon receipt of said response signalling message, detecting the selected routing number, and routing the call to the network location corresponding to the selected routing number for completion to said alternative emergency services operator station.

US 6,332,023 B1

METHOD OF AND SYSTEM FOR PROVIDING SERVICES IN A COMMUNICATIONS NETWORK

Kelvin Porter, Dallas, and Carol Waller, Allen, both of Tex., assignors to MCI Communications Corporation, Washington, D.C.

Filed Jun. 4, 1998, Appl. No. 89,890
Int. Cl. H04M *3/00*
U.S. Cl. 379—242 **21 Claims**



1. A system for providing services in a communications network, which comprises:

a service processing function, said service processing function having means for receiving service requests, formulating requests for interworking functions based upon service requests, and formulating resource requests based upon service requests and interworking functions;

a universal directory function, said universal directory function having means for receiving addresses and returning interworking functions based upon addresses;

a nodal resource manager having means for receiving resource requests and allocating resources to said service processing function in response to resource requests; and,

a resource data structure accessible by said nodal resource manager, said resource data structure including an entry corresponding to each network resource available to said nodal resource manager.

US 6,332,024 B1

PORTABLE TERMINAL

Katsuo Inoue; Tomoaki Tsukada; Kensei Ito, and Satoshi Okamoto, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP99/00387, § 371 Date Oct. 19, 1999, § 102(e) Date Oct. 19, 1999, PCT Pub. No. WO99/45459, PCT Pub. Date Sep. 10, 1999
PCT Filed Jan. 29, 1999, Appl. No. 403,189
Claims priority, application Japan, Mar. 5, 1998, 10-53640
Int. Cl. H04M *1/00*
U.S. Cl. 379—433.06 **14 Claims**

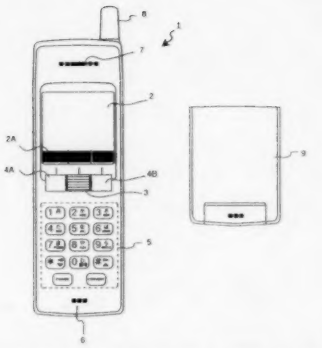
1. A portable terminal, comprising:

a case;

a display screen located on a first surface of said case, said display screen displaying thereon various information according to an operation mode of said terminal;

a main soft key located on said first surface below said display screen, and a first auxiliary soft key located on said first surface adjacent to said main soft key, wherein said main soft key performs a scrolling operation by being actuated in either of a first and second direction and performs a selection operation by being pressed toward said first surface, and said auxiliary soft key performs at least a selection operation by being pressed toward said first surface; wherein

various different functions may be allocated to said main soft key and to said auxiliary soft key through scrolling and selection operations performed on said main soft key and at least selection operations on said auxiliary soft key; and



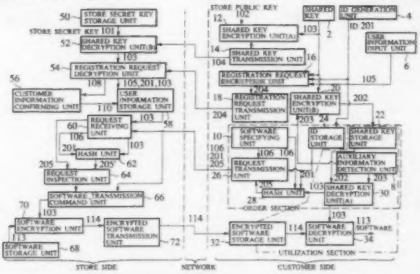
the identity of functions currently allocated to said main soft key and to said auxiliary soft key are displayed in a function display area of said display screen adjacent to said soft keys.

US 6,332,025 B2

SOFTWARE DISTRIBUTION SYSTEM AND SOFTWARE UTILIZATION SCHEME FOR IMPROVING SECURITY AND USER CONVENIENCE

Toshinari Takahashi, Tokyo, and Hiroyasu Nogami, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of application No. 08/814,538, filed on Mar. 10, 1997. This application Dec. 18, 2000, Appl. No. 738,857.
Claims priority, application Japan, Mar. 10, 1997, 8-053407
Int. Cl. H04L *9/12*
U.S. Cl. 380—281 **19 Claims**



1. A client device for utilizing software, comprising:

a user registration unit configured to carry out a user registration by generating a shared key at a user side and storing the shared key at the user side, the shared key is to be stored at both a software provider side and the user side before any request for a software is issued from a user to a software provider and having a guaranteed correspondence with an ID information regarding a payment of a software fee by the user;

a software request unit configured to request a desired software from the user to the software provider by using the shared key, and to receive the desired software in an encrypted form using the shared key from the software provider;

a decryption unit configured to decrypt the desired software received from the software provider by using the shared key stored at the user side; and

a processing unit configured to utilize the desired software in a decrypted form.

US 6,332,026 B1

BASS MANAGEMENT SYSTEM FOR HOME THEATER EQUIPMENT

Juha Kuusama; Minna Juhola, and Juha Laaksonen, all of Tampere, Finland, assignors to Flextronics Design Finland Oy, Tampere, Finland

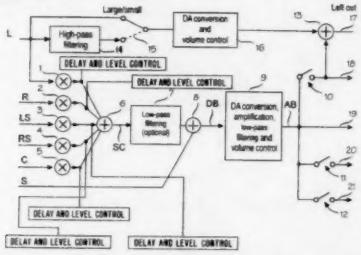
PCT No. PCT/FI97/00466, § 371 Date May 1, 1998, § 102(e) Date May 1, 1998, PCT Pub. No. WO98/06239, PCT Pub. Date Feb. 12, 1998

PCT Filed Aug. 5, 1997, Appl. No. 43,681

Claims priority, application Finland, Aug. 6, 1996, 963104; May 26, 1997, 972221

Int. Cl. H04R *5/00*

U.S. Cl. 381—17 **2 Claims**



1. A setup to be used in a home theater or other sound reproduction system for handling low frequency sound signals, comprising:

a signal source providing several full bandwidth digital sound channels;

at least one digital low frequency subwoofer channel;

a delay-and level control unit at least for each full bandwidth signal channel, which is equipped with a speaker not capable of reproducing low frequency sounds;

a first summing stage for creating a sum channel by summing the delay-and level controlled signal channels;

a second summing stage to add the low frequency subwoofer channel to the sum channel in order to create one digital bass channel;

a DA-conversion-, amplifying-, lowpass-filtering-and volume control unit to process the digital bass channel in order to create an analog bass channel; and

switch means disposed between speakers capable of reproducing full bandwidth sound signals and the analog bass channel, and summing means for combining the analog bass channel to analog signals directed to speakers capable of reproducing full bandwidth sound signals.

US 6,332,027 B1

NOISE-ABSORPTION STRUCTURES AND WALLS CONSTITUTED THEREBY

Jean-Claude Guilloud, Plaisir; Dominique Collin, Draveil; Jacques Julliard, Hericy, and Christine Fumoux, Villiers Saint Frederic, all of France, assignors to Bertin & Cie, Plaisir Cedex, and Societe Nationale d'Etude et de Construction de moteurs d'Aviation - Snecma, Paris Cedex, both of France

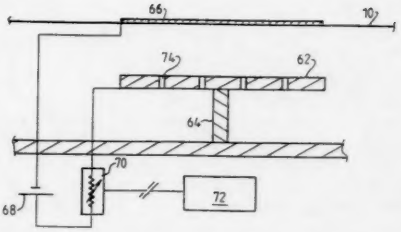
Continuation of application No. 08/883,136, filed on Jun. 27, 1997, now abandoned. This application Jan. 7, 1998, Appl. No. 3,900.

Claims priority, application France, Jun. 28, 1996, 96 08064

Int. Cl. H03B *29/00*

U.S. Cl. 381—71.1 **8 Claims**

7. A noise absorption structure comprising a support frame, a gastight, sound-deformable membrane tensioned and fixed over said support frame, said membrane having an outside face receiving soundwaves, an internal volume defined by the frame and the membrane and filled with gas, and electrostatic energy-dissipation means housed in said internal volume for absorbing energy corresponding to membrane deformation caused by incident soundwaves, said electrostatic energy-dissipation means comprising electrode plates disposed parallel to the membrane at a distance therefrom, at least one other electrode formed on the membrane, a resistor, and a direct current source having opposite poles connected respectively with said electrode plates and with said at least one other electrode through said resistor.



US 6,332,028 B1

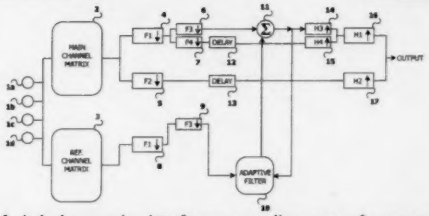
DUAL-PROCESSING INTERFERENCE CANCELLING SYSTEM AND METHOD

Joseph Marash, Haifa, Israel, assignor to Andrea Electronics Corporation, Melville, N.Y.

Continuation-in-part of application No. 08/840,159, filed on Apr. 14, 1997. This application Apr. 7, 1998, Appl. No. 55,709. This patent is subject to a terminal disclaimer.

Int. Cl. H04R *3/00*

U.S. Cl. 381—92 **16 Claims**



1. A dual-processing interference canceling system for processing an input signal containing a target signal component originating from a target source and an interference signal component originating from one or more interference sources and for producing an output signal representing the target signal component with a substantially reduced interference signal component, comprising:

a main-channel generator capable of receiving said input signal and for generating therefrom a broadband main channel having said target signal component and said interference component;

a reference-channel generator capable of receiving said input signal and for generating one or more broadband reference channels representing signals received from said one or more interference sources;

a first low-pass filter, connected to the reference-channel generator, for filtering said one or more broadband reference channels into one or more low-frequency reference channels;

an adaptive filter, connected to the first low-pass filter and having filter weights, for filtering said one or more low-frequency reference channels into one or more low-frequency canceling signals approximating the low-frequency interference signal component present in the broadband main channel;

an interpolator, connected to the adaptive filter, for interpolating said one or more low-frequency canceling signals into one or more broadband canceling signals;

a subtractor, connected to the main-channel generator and the interpolator, for generating a broadband output by subtracting

said one or more broadband canceling signals from the broadband main channel;

a second low-pass filter for filtering the broadband output to produce a low-frequency output; and

said adaptive filter having filter-weight-updating means for determining updated filter weight values for the adaptive filter such that the difference between the low-frequency output and said one or more low-frequency canceling signals is substantially minimized; said adaptive filter also having weight constraining means for truncating said updated filter weight values to predetermined threshold values when the updated filter weight value exceeds the corresponding threshold value.

US 6,332,029 B1

ACOUSTIC DEVICE

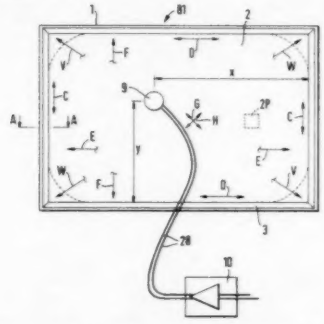
Henry Firouz Azima, Cambridge; Martin Colloms, London, and Neil John Harris, Cambridge, all of United Kingdom, assignors to New Transducers Limited, London, United Kingdom

Filed Sep. 3, 1996, Appl. No. 707,012

Claims priority, application United Kingdom, Sep. 2, 1995, 9517918; Oct. 31, 1995, 9522281; Mar. 30, 1996, 9606836

Int. Cl. H04R *25/00*

U.S. Cl. 381—152 **18 Claims**



1. An acoustic device adapted for operation over an operative frequency range of interest, comprising:

a substantially rectangular member extending transversely of its thickness and capable of sustaining bending waves at least over an intendedly active area of the transverse extent of the member, the member having certain physical parameters the values of which affect the distribution of resonant modes of bending wave vibration over the active area of the member, said parameters having selected values such that the resonant bending wave modes are beneficially distributed in frequency over the active area of the member so that the member is a well-behaved acoustic element when vibrating in the frequency range of interest, wherein the member has a cellular core having a shear modulus of at least about 10 megapascals, and a skin having a Young's modulus of at least about 1 gigapascal, and

a transducer coupled to the member in a region of the active area of the member where a plurality of lower frequency resonant bending wave modes in the operative frequency range of interest have vibrationally active anti-nodes so that the transducer will couple with the resonant bending wave modes.

US 6,332,030 B1

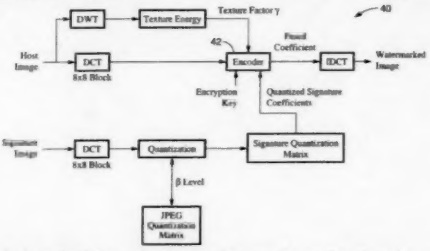
METHOD FOR EMBEDDING AND EXTRACTING DIGITAL DATA IN IMAGES AND VIDEO

B. S. Manjunath; Jong Jin Chae; Debargha Mukherjee, all of Goleta, and Sanjit K. Mitra, Santa Barbara, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Provisional application No. 60/071,581, filed on Jan. 15, 1998. This application Jan. 14, 1999, Appl. No. 231,547.

Int. Cl. G06K *9/00*

U.S. Cl. 382—100 **3 Claims**



1. A method for embedding a signature image in a host image, comprising:

(a) performing a single level discrete wavelet transform decomposition of said signature image and said host image;

(b) quantizing into β levels each coefficient of said signature image by grouping a set of n coefficients in the host image to form an n-dimensional vector, and perturbing said vector according to a β-ary channel code comprising a subset of an n-dimensional lattice scaled by a factor α;

(c) embedding each subband of said signature image into a corresponding subband of said host image to produce a composite image;

(d) subtracting the coefficients of said host image from the coefficients of the composite image to obtain noisy perturbations;

(e) grouping the resulting coefficients into groups of n to obtain a vector $\vec{e}$;

(f) scaling said vector $\vec{e}$ by $1/\alpha$ to produce a resulting vector $1/\alpha \cdot \vec{e}$;

(g) nearest-neighbor encoding $1/\alpha \cdot \vec{e}$ to find an index i of the channel code nearest to it in Euclidean distance;

(h) obtaining a quantized discrete wavelet transform coefficients from said index i.

US 6,332,031 B1

MULTIPLE WATERMARKING TECHNIQUES FOR DOCUMENTS AND OTHER DATA

Geoffrey Rhoads, West Linn, and Ammon Gustafson, Beaverton, both of Oreg., assignors to Digimarc Corporation, Tualatin, Oreg.

Continuation of application No. 09/234,780, filed on Jan. 20, 1999, now abandoned, Provisional application No. 60/071,983, filed on Jan. 20, 1998. This application Jul. 14, 2000, Appl. No. 616,462.

Int. Cl. G06K *9/00*

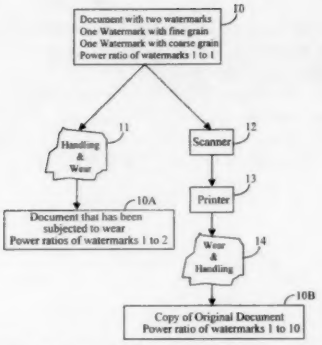
U.S. Cl. 382—100 **6 Claims**

1. A method of creating a watermarked image which comprises the steps of:

modifying an HSI (hue, saturation, Intensity) representation of an image to imbed a first watermark in said image and create a first watermarked image,

transforming said first watermarked image to the RGB (red, green, blue) color space, biasing the values which represent a second watermark toward a particular color,

modifying said HSI values to imbed said biased second watermark in said image and create a second watermarked image,



transforming said second watermarked image to the RGB color space, and

combining the values of said first and second watermarked images to create a final watermarked image.

US 6,332,032 B1

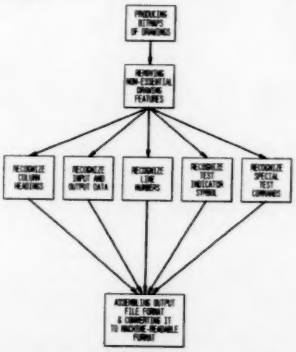
METHOD FOR GENERATING TEST FILES FROM SCANNED TEST VECTOR PATTERN DRAWINGS

Gerald T. Michael, Ocean, N.J.; Wei Su, Staten Island, N.Y., and Michael A. Dukes, Wimberley, Tex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 3, 1998, Appl. No. 210,529

Int. Cl. G06K *9/62*

U.S. Cl. 382—113 **27 Claims**


PRODUCING BITMAPS OF DRAWINGS
REMOVING NON-ESSENTIAL DRAWING FEATURES
RECOGNIZE COLUMN NUMBERS
RECOGNIZE INPUT AND OUTPUT DATA
RECOGNIZE LINE NUMBERS
RECOGNIZE TEST INDICATOR SYMBOL
RECOGNIZE SPECIAL TEST COMMANDS
ASSEMBLING OUTPUT FILE FORMAT & CONVERTING IT TO MACHINE-READABLE FORMAT

1. A computer implemented method for generating test vector files from test pattern drawings for computer-aided design and integrated circuit testing tools, comprising the steps of:

producing a bitmap image of a test pattern drawing having a plurality of rows and columns of test pattern data, wherein the bitmap image comprises a plurality of black and white pixels and wherein the test pattern data comprises testing characteristics of a circuit or component;

locating and removing non-essential drawing symbols from the bitmap image;

recognizing essential test pattern information from the bitmap image; and

converting the essential test pattern information into said test vector files in a machine-readable file format.

US 6,332,033 B1

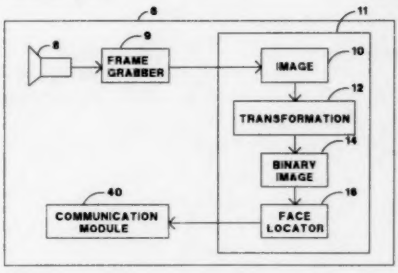
SYSTEM FOR DETECTING SKIN-TONE REGIONS WITHIN AN IMAGE

Richard Qian, Vancouver, Wash., assignor to Sharp Laboratories of America, Inc., Camas, Wash.

Continuation of application No. 09/004,539, filed on Jan. 8, 1998, now Pat. No. 6,148,092. This application Aug. 14, 2000, Appl. No. 638,732.

Int. Cl. G06K *9/00*

U.S. Cl. 382—124 **72 Claims**



1. A method of detecting a skin-tone image comprising the steps of:

(a) receiving said image including a plurality of pixels, where a plurality of said pixels of said image is represented by respective groups of at least three values;

(b) filtering said image by transforming a plurality of said respective groups of said at least three values, where said respective groups of said less than three values has less dependency on brightness than said respective groups of said at least three values;

(c) determining regions of aid image representative of skin-tones based on said filtering of step (b);

(d) calculating a first distribution of said regions of said image representative of said skin-tones in a first direction;

(e) calculating a second distribution of said regions of said image representative of said skin-tones in a second direction, where said first direction and said second direction are different, the alignment of said first direction does not change based on the color distribution of said image, and the alignment of said second direction does not change based on the color distribution of said image; and

(f) locating said skin-tone region within said image based on said first distribution and said second distribution.

US 6,332,034 B1

IMAGE PROCESSING METHOD INCLUDING STEPS FOR THE SEGMENTATION OF A MULTIDIMENSIONAL IMAGE, AND MEDICAL IMAGING APPARATUS UTILIZING THIS METHOD

Shérif Makram-Ebeid, Dampierre, and Matthieu Philip, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

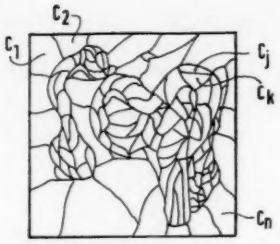
Filed Mar. 19, 1999, Appl. No. 273,281

Claims priority, application France, Mar. 24, 1998, 98 03603

Int. Cl. G06K *9/00*

U.S. Cl. 382—128 **15 Claims**

1. A method for the processing of a multidimensional image which is formed by points representing objects which have an intensity which differs from one object to another, and are delimited from a background by way of their edges, the method comprising:



segmenting the image into cells relating to the background and cells relating to the objects, by applying criteria which impose that said cells have respective, substantially uniform intensities, that said cells neither intersect nor enclose any object edge, and that the object edges coincide with cell edges.

US 6,332,035 B1

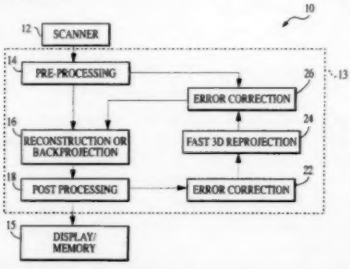
FAST HIERARCHICAL REPROJECTION ALGORITHMS FOR 3D RADON TRANSFORMS

Samit Basu, Clifton Park, N.Y., and Yoram Bresler, Urbana, Ill., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Continuation-in-part of application No. 09/539,073, filed on Mar. 30, 2000, and a continuation-in-part of application No. 09/419,415, filed on Oct. 15, 1999, now Pat. No. 6,263,096, and a continuation-in-part of application No. 09/338,092, filed on Jun. 23, 1999, now abandoned, which is a continuation-in-part of application No. 09/539,074, filed on Mar. 30, 2000, and a continuation-in-part of application No. 09/418,933, filed on Oct. 15, 1999, now Pat. No. 6,282,257, and a continuation-in-part of application No. 09/338,677, filed on Jun. 23, 1999, now abandoned. This application Sep. 25, 2000, Appl. No. 669,505.

Int. Cl. G06K *9/00*

U.S. Cl. 382—128 **8 Claims**



1. A process for generating a sinogram from a 3D electronic image, the sinogram being a collection of samples of the 3D Radon transform, comprising the steps of:

dividing the 3D image into a plurality of sub-images;

computing sub-sinograms of each of said sub-images; and

aggregating said sub-sinograms to create the sinogram,

wherein said aggregating steps include a number of exact aggregations and a number of approximate aggregations.

US 6,332,036 B1

COLOR EXTRACTION APPARATUS AND METHOD

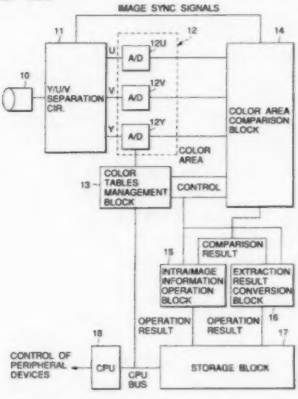
Takayuki Sakamoto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 25, 1998, Appl. No. 140,137

Claims priority, application Japan, Aug. 29, 1997, PO9-235285

Int. Cl. G06K *9/00*

U.S. Cl. 382—162 **4 Claims**



1. An apparatus for extracting color from an image signal, comprising:

input signal processing means for obtaining a luminance signal and chrominance signals from an input image signal;

color table managing means for producing, as a reference, a signal indicating a color area by searching a preset table based on a signal level of the luminance signal;

control means for setting in advance tables corresponding to signal levels of the luminance signal in the color table managing means;

color area comparing means for judging whether a color of the input image signal belongs to the reference color area by comparing the signal indicating the reference color area with signal levels of the chrominance signals; and

storing means for accumulating a color extraction result for the input image signal that is obtained as a comparison output of the color area comparing means;

means for calculating, for each of the color models, the number of color extraction results indicating that the color of the input image signal belongs to the reference color area; and

means for calculating, for each of the color models, positional information and distribution information of in the image based on the number of color extraction results indicating that the color of the input image signal belongs to the reference color area and positions of those color extraction results in the image, wherein the storing means stores calculation results independently for the respective color models;

wherein the control means sets a plurality of color models in tables of the color table managing means;

wherein the color table managing means produces, as references, signals indicating color areas for the respective color models by searching the tables in which the plurality of color models are set based on the signal level of the luminance signal;

wherein the color area comparing means judges whether the color of the input image signal belongs to the reference color areas by comparing the signals indicating the reference color areas with the signal levels of the chrominance signals; and further

wherein the storing means accumulates color extraction results for the input image signal that are obtained as comparison outputs of the color area comparing means, the color extraction results being combined as unit data for each position in an image.

US 6,332,037 B1

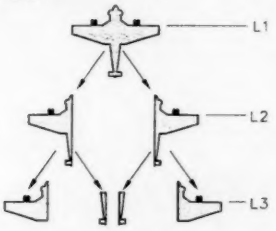
INVARIANT, EIGENVALUE BASED, NON-DEGENERATE DATA STRUCTURE CHARACTERIZATION, STORAGE AND RETRIEVAL INDEXING METHOD

Qiuming Zhu, Omaha, Nebr., assignor to Board of Regents of the University of Nebraska, Lincoln, Nebr.

Filed Apr. 9, 1999, Appl. No. 287,961

Int. Cl. G06K *9/34*

U.S. Cl. 382—173 **19 Claims**



1. A method of providing an identifying data image index (I) for a two dimensional data image consisting of a multiplicity of pixels, said method comprising the steps of:

a. determining Eigenvalues for essentially the entire data image, said Eigenvalues being a major axis (λ_{11}) and a minor axis (λ_{21}) of a characteristic virtual ellipse, then calculating a first (**I1**) non-degenerate data image index element using the formula:

$$I_1 = \frac{(\lambda_{11} - \lambda_{12})^2}{\lambda_{11} + \lambda_{21}};$$

b. dividing said essentially entire two dimensional data image into first and second data image parts about an axis selected from the group consisting of:

said minor axis; and

said major axis;

and for each of said first and second data image parts independently determining Eigenvalues therefore, said Eigenvalues being a major axis (λ_{12}) and a minor axis (λ_{22}) for the first of said separate characteristic virtual ellipses, and major axis (λ_{13}) and a minor axis (λ_{23}) for the second of said separate characteristic virtual ellipses, and then calculating second (**I2**) and third (**I3**) non-degenerate data image index elements using the formulas:

$$I_2 = \frac{(\lambda_{12} - \lambda_{22})^2}{\lambda_{12} + \lambda_{22}}; \text{ and}$$

$$I_3 = \frac{(\lambda_{13} - \lambda_{23})^2}{\lambda_{13} + \lambda_{23}};$$

c. concatenating said first, second and third non-degenerate data image index elements to provide said identifying data image index (I) by a selection from the group consisting of:

I=I1 I2 I3;

I=I1 I3 I2;

I=I2 I1 I3;

I=I2 I3 I1;

I=I3 I1 I2; and

I=I3 I2 I1.

US 6,332,038 B1

IMAGE PROCESSING DEVICE

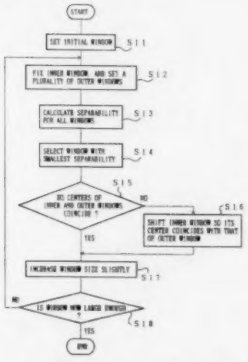
Ryuji Funayama, Nara; Minehiro Konya, Daito, and Hajime Takezawa, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 6, 1999, Appl. No. 286,475

Claims priority, application Japan, Apr. 13, 1998, 10-101600

Int. Cl. G06K *9/00;9/36;9/66;* **H04N** *7/18;5/225*

U.S. Cl. 382—190 **58 Claims**



1. An image processing device which extracts from an image obtained from outside said image processing device a partial image containing a specified object domain for extraction, comprising:

image extraction processing means, which set two mutually exclusive provisional domains in the obtained image, and extract the partial image based on separability of the two provisional domains,

wherein said image extraction processing means extract the partial image based on a separability series obtained by incrementally changing the sizes of the two provisional domains, and

wherein the sizes of the two provisional domains are changed by setting the two provisional domains in the obtained image to initially have sizes smaller than a size of the obtained image, and then successively increasing the sizes of the two provisional domains, while keeping their centers fixed, until they exceed limits of a screen of the obtained image.

US 6,332,039 B1

STRUCTURED DOCUMENT PREPARATION APPARATUS AND STRUCTURED DOCUMENT PREPARATION METHOD

Tatsuo Bando, Musashino; Shitashi Kato, Fujisawa; Hiroshi Okutomi, Tanashi, and Kiyoshi Toyoda, Kunitachi, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

PCT No. PCT/JP98/01413, § 371 Date Mar. 24, 1999, § 102(e) Date Mar. 24, 1999, PCT Pub. No. WO99/08207, PCT Pub. Date Feb. 18, 1999

PCT Filed Mar. 27, 1998, Appl. No. 269,172

Claims priority, application Japan, Aug. 7, 1997, 9-227098

Int. Cl. G06K *9/00;9/60;9/66;* **G06F** *17/24*

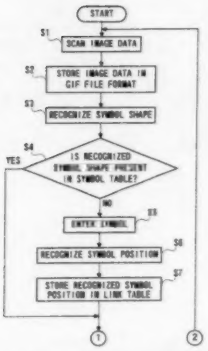
U.S. Cl. 382—195 **12 Claims**

1. A structured document creating apparatus comprising:

an input section that inputs image data in a plurality of originals in sequence from an earlier original to a later original, each original having a symbol in a predetermined area of each original, only a symbol being contained in the predetermined area;

a symbol recognizing section that recognizes an attribute of the symbol only in the predetermined area of each original;

a judging section that judges whether the symbol having the same attribute as the recognized symbol is present in a symbol table;



a table creating section that, when the symbol having the same attribute as the recognized symbol is not present in the symbol table, stores the recognized symbol in the symbol table, that stores, when the symbol having the same attribute as the recognized symbol is present in the symbol table, a first link information in the symbol table, and that stores, when the original being processed is not a first original of the plurality of originals, a second link information in the symbol table, and

a document creating section that creates a structured document described in Hyper Text Marked Language (HTML) based on the symbol table so that the image data of each page is linked based on the first link information and second link information;

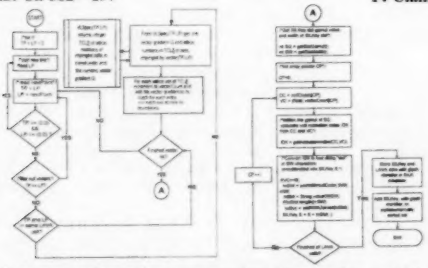
wherein the first link information relates an earlier original having the recognized symbol to a later original having the recognized symbol, the second link information relates a later original to an earlier original.

US 6,332,040 B1

METHOD AND APPARATUS FOR SORTING AND COMPARING LINEAR CONFIGURATIONS

J. Howard Jones, 858 Joe Yenni Blvd. - Apt 29, Kenner, La. 70065

Filed Nov. 4, 1997, Appl. No. 964,298
Int. Cl. G06K *9/48;9/00;9/46*
U.S. Cl. 382—197 **14 Claims**



1. In connection with a computer based system for classifying, manipulating, storing, searching, and selectively retrieving items from at least one image database which includes multiple glyphs, which computer based system includes

at least one computer processing unit,

programmable working memory associated with said at least one computer Processing unit,

a data storage system, containing the at least one image database, associated with said at least one computer processing unit,

persistent memory, and

input/output ("I/O") means associated with at least said at least one computer processing unit, a method of classifying, manipulating, storing, searching, and selectively retrieving items from said at least one image database, comprising the following steps:

a) setting up in working memory a template analytic lattice constituted of a predetermined multiplicity of cell partitions, the totality of the analytic lattice being coextensive with the defined rendering area of each of the glyphs and in the plane of motion of the linear motion paths of each of the glyphs;

b) interpreting in the working memory of the computer each linear motion path of each glyph as a sequence of displacement vectors, determining which displacement vectors intersect specific boundaries of specific cells of the analytic lattice, and registering in memory each cell boundary intersection by both recording the intersecting vector inclination gradient and incrementing an associated vector count for each cell bounded by the intersected boundary;

c) combining all of the vector inclination gradients registered for each cell in working memory, producing an associated numeric clutch value as a cumulative total of the registered vector inclination gradients;

d) deriving in working memory a numeric inclination index value for each cell from the associated vector count and the associated clutch value, the kind of the inclination index being selected from the group consisting of

(1) a numeric sum inclination index calculated as the specific rotational increment of a resultant vector inclination derived by adding the inclinations of all the vector displacements that intersect the cell boundaries;

(2) a numeric meld inclination index calculated as the specific rotational increment of an average vector inclination derived by dividing the cell clutch value by the associated vector count; and

(3) a numeric delta inclination index calculated as the specific rotational increment of differential vector inclination derived by subtracting the meld inclination index value from the sum inclination index value;

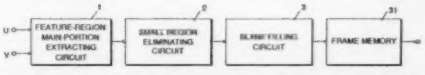
whereby there is no need to process representational content elements and incidental local mark features of the images in said at least one database, and whereby said at least one image database may be searched by filtering and eliminating non-viable search candidates prior to processor intensive content feature analysis through comparison of textual token keys.

US 6,332,041 B1

FEATURE-REGION EXTRACTION METHOD AND FEATURE-REGION EXTRACTION CIRCUIT

Shigeo Yoshida, Chiba, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of application No. 08/675,810, filed on Jul. 5, 1996, now Pat. No. 5,748,776, which is a continuation of application No. 08/276,205, filed on Jul. 18, 1994, now abandoned. This application Mar. 18, 1998, Appl. No. 40,579.
Claims priority, application Japan, Jul. 19, 1993, 5-178250; Dec. 22, 1993, 5-323709
Int. Cl. G06K *9/36;* **H04N** *11/02*
U.S. Cl. 382—236 **3 Claims**



1. In a color image transmission system, said color image transmission system having a finite transmission capacity, a method of using a feature-region extraction circuit comprising:

providing an extracting means for extracting a feature-region main portion of a frame;

providing a detection pattern for determining whether a particular pixel of a present frame is part of the feature-region, said detection pattern selected according to a histeresis characteristic, said histeresis characteristic indicating whether said

particular pixel or adjoining pixels were part of the feature-region in at least one previous frame;

extracting and storing in a memory the feature-region main portion of the frame based on said determination; and

allocating a greater part of said finite information transmission capacity to the extracted feature-region and a remaining part of said capacity to a non-extracted portion of said color image.

US 6,332,042 B1

APPARATUS AND METHOD FOR ENCODING AND DECODING DATA IN A LOSSY TRANSMISSION ENVIRONMENT

Tetsujiro Kondo, Kanagawa-Prefecture, Japan; Yasuhiro Fujimori, Cupertino, Calif.; James J. Carrig, and Sugata Ghosal, both of San Jose, Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Continuation of application No. 09/016,083, filed on Jan. 30, 1998, which is a continuation-in-part of application No. 09/002,547, filed on Jan. 2, 1998, now abandoned, and a continuation-in-part of application No. 09/002,470, filed on Jan. 2, 1998, now abandoned, and a continuation-in-part of application No. 09/002,553, filed on Jan. 2, 1998, now abandoned, which is a continuation-in-part of application No. 08/956,632, filed on Oct. 23, 1997, now abandoned, and a continuation-in-part of application No. 08/957,555, filed on Oct. 23, 1997, now abandoned, and a continuation-in-part of application No. 08/956,870, filed on Oct. 23, 1997, now abandoned. This application Jul. 6, 1998, Appl. No. 111,111.

Int. Cl. G06K *9/36*

U.S. Cl. 382—239 **35 Claims**

1. A method for encoding a plurality of blocks of data comprising the steps of:

coding the plurality of blocks according to a determined encoding algorithm to form an encoded section of blocks;

determining a section number reflective of a bit stream length of the data within the section;

generating a synchronization function of the section numbers to synchronize a decoder with the bit stream;

coding the synchronization function according to the determined encoding algorithm;

including the encoded synchronization function in the encoded data for the sections;

transmitting the encoded section of blocks and the synchronization function;

receiving the encoded section of blocks and the synchronization function by a decoder, said encoded section including errors; and

using the synchronization function to synchronize the decoder to the received encoded section.

US 6,332,043 B1

DATA ENCODING METHOD AND APPARATUS, DATA DECODING METHOD AND APPARATUS AND RECORDING MEDIUM

Masami Ogata, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of application No. PCT/JP98/01410, filed on Mar. 27, 1998. This application Nov. 27, 1998, Appl. No. 200,416.

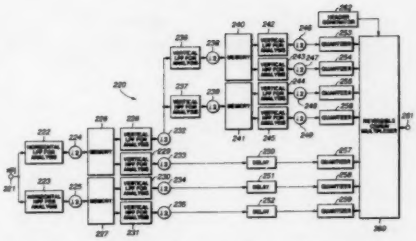
Claims priority, application Japan, Mar. 28, 1997, 9-078618

Int. Cl. G06K *9/36;9/46*

U.S. Cl. 382—240 **8 Claims**

1. A data encoding method, comprising the steps of:

encoding data using wavelet transform; and



appending information on the encoding, used for decoding, to a bitstream of data encoded using the wavelet transform for transmitting resulting data;

wherein the appending step appends to said bitstream, as information on the encoding, a flag specifying whether a filter previously set for decoding or any other optional filter is to be used; and

wherein if said flag specifies that said other optional filter is to be used, the appending step arrays, as information on the encoding, a number of taps of the filter, a phase shift quantity, and filter coefficients on a trailing side of the flag.

US 6,332,044 B1

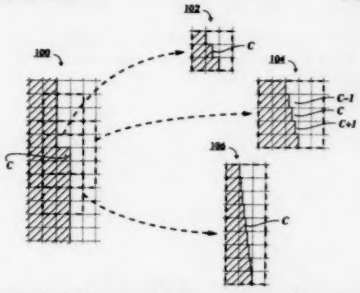
SYSTEM AND METHOD FOR ENHANCEMENT OF IMAGE CONTOUR FIDELITY

Robert P. Loce, Webster, and Michael Branciforte, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 21, 1997, Appl. No. 784,636

Int. Cl. G06K *9/40;9/56;9/62*

U.S. Cl. 382—269 **9 Claims**



1. A method of enhancing an image represented by a plurality of pixels, comprising the steps of:

obtaining pixel values representing a segment of the image;

isolating a plurality of regions of the pixels of said image segment to form a plurality of windows, a first window having dimension N×N, a second window having dimension A×B where A>=N and B>=N, and wherein B does not equal A, and a third window of dimension B×A orthogonal to said second window wherein overlapping regions of said windows are centered about a central pixel and a plurality of pixels surrounding said central pixel;

comparing, in an heirarchical manner, at least two of the regions of pixels within said windows with a set of standard pixel patterns for each of the windows;

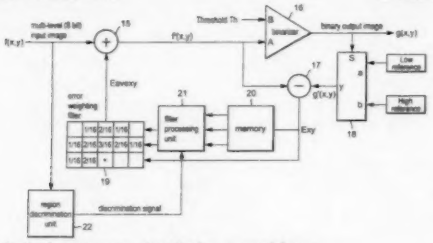
identifying matching pixel patterns within each of the windows; and

enhancing the central pixel when the central pixel is located at a correctable position in only one of the windows, and enhancing the central pixel when the central pixel is located at a correctable position in a plurality of the windows wherein the enhancement is accomplished in accordance with an enhancement associated with one of the windows.

US 6,332,045 B1
IMAGE PROCESSING DEVICE

Kenichi Sawada, Toyohashi, and Atsushi Ishikawa, Okazaki, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 25, 1998, Appl. No. 199,406
Claims priority, application Japan, Nov. 25, 1997, 9-340671
Int. Cl. G06F *15/70*
U.S. Cl. 382—272 **8 Claims**



1. An image processing device, comprising:

an image data correction unit for correcting multi-level image data of a target pixel;

an image data binarizer for binarizing the corrected multi-level image data of the target pixel;

a binarization error calculator which calculates a first error between the corrected multi-level image data and data corresponding to the binarized image data; and

means for executing a predetermined filtering process on the first error to calculate a second error, and

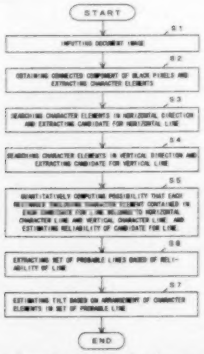
means for weighting and averaging the second error;

wherein the image data correction unit corrects the multi-level image data by using the weighted and averaged second error.

US 6,332,046 B1
DOCUMENT IMAGE RECOGNITION APPARATUS AND COMPUTER-READABLE STORAGE MEDIUM STORING DOCUMENT IMAGE RECOGNITION PROGRAM

Katsuhito Fujimoto; Hiroshi Kamada, and Koji Kurokawa, all of Kanagawa, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 18, 1998, Appl. No. 193,868
Claims priority, application Japan, Nov. 28, 1997, 9-327625; May 28, 1998, 10-146926
Int. Cl. G06K *9/36*
U.S. Cl. 382—289 **7 Claims**



1. A method for detecting a tilt of a document image stored as electronic data, amending the tilt, and recognizing the document image, comprising:

a character element extracting step for referring to the document image, and extracting a set of character from the document image;

a line candidate extracting means for referring to the extracted set of character elements, and extracting a candidates for horizontal character line and a candidate for a vertical character lines;

a line reliability estimation means for estimating reliability of the extracted candidate for character line;

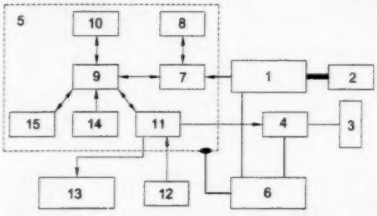
line extraction means for extracting a set of probably lines based on the estimated reliability; and

tilt estimation means for estimating a tilt of the document image based on an arrangement of character elements contained in the extracted set of probable lines.

US 6,332,047 B1
TEST EQUIPMENT FOR COLOR PRINTING

Martin Sebborn, Cambridge, and Lawrence Mullaney, Royston, both of United Kingdom, assignors to Laurie Mullaney Associates Limited, United Kingdom

PCT No. PCT/GB96/02913, § 371 Date Aug. 7, 1998, § 102(e) Date Aug. 7, 1998, PCT Pub. No. WO97/21074, PCT Pub. Date Jun. 12, 1997
PCT Filed Nov. 27, 1996, Appl. No. 77,730
Claims priority, application United Kingdom, Dec. 6, 1995, 9524932
Int. Cl. G06K *9/32*
U.S. Cl. 382—298 **7 Claims**



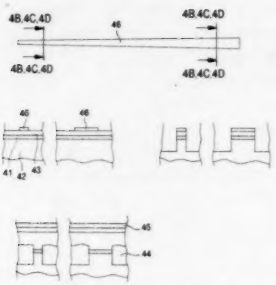
1. A method of measuring an imaged printing plate for the ratio of imaged to non-imaged surface area, comprising providing even light over that area of the imaged plate to be measured, enlarging said area via magnifying means, obtaining an image of the enlarged area via a c.c.d. camera, capturing electronic signal fed from the camera via an electronic frame grabber to provide an electronic image representing the enlarged area, feeding the captured image to an electronic circuit, analyzing the captured image by the electronic circuit to determine the ratio of imaged to non-imaged surface area and providing an output of the ratio of imaged to non-imaged surface area.

US 6,332,048 B1
MODULATOR AND METHOD FOR MANUFACTURING OF SUCH A MODULATOR

Lennart Lundqvist, Kista, Sweden, assignor to Telefonaktiebolaget LM Ericsson (publ), Stockholm, Sweden

Filed Oct. 14, 1999, Appl. No. 418,369
Claims priority, application Sweden, Oct. 15, 1998, 9803522
Int. Cl. G02F *1/035*
U.S. Cl. 385—2 **16 Claims**

1. Electro-absorption modulator of waveguide type for modulation of light, comprising a waveguide core, a waveguide cladding and an electrode, the modulator being arranged to modulate light launched into the modulator in response to a voltage applied on the electrode, wherein a thickness of the waveguide core varies along a length of the modulator in such a way that the thickness is smaller near an end of the modulator where the light is input into

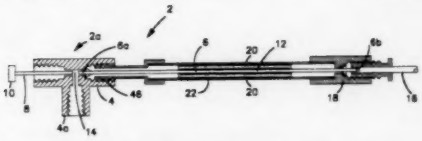


the modulator, for the purpose of reducing the absorption of the modulator there.

US 6,332,049 B1
LUMINESCENCE DETECTOR WITH LIQUID-CORE WAVEGUIDE

Purnendu K. Dasgupta, Lubbock, Tex., assignor to Global FIA, Inc., Gig Harbor, Wash.

Filed Jan. 22, 2000, Appl. No. 490,186
Int. Cl. G02B *6/00*
U.S. Cl. 385—12 **22 Claims**



1. A photoluminescence detector, comprising:

(a) a liquid-core waveguide comprising a transparent tube having first and second ends, for containing a liquid which can emit photoluminescence;

(b) a light source which can provide radiation suitable for exciting the liquid to emit photoluminescence, the radiation from the light source being provided transversely with respect to the liquid-core waveguide tube; and

(c) a photodetector, for detecting photoluminescence emitted by the liquid in the liquid-core waveguide tube;

the liquid-core waveguide tube being made of or coated with an amorphous fluoropolymer which is a copolymer of tetrafluoroethylene and perfluoro-2,2-dimethyl-1,3-dioxole.

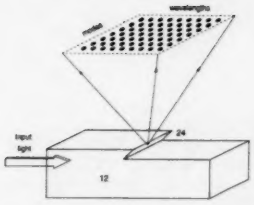
US 6,332,050 B1
OPTICAL SLAB WAVEGUIDE FOR MASSIVE, HIGH-SPEED INTERCONNECTS

Martin Feldman; Ahmed A. El-Amawy, and Ramachandran Vaidyanathan, all of Baton Rouge, La., assignors to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Filed Apr. 5, 2000, Appl. No. 543,617
Int. Cl. G02B *6/28;* **H04J** *14/02*
U.S. Cl. 385—24 **33 Claims**

1. An apparatus comprising a plurality of light sources, a waveguide, at least one input port, and at least one output port; wherein:

(a) said waveguide is adapted to transmit light received at said input ports to said output ports; wherein said waveguide comprises a first reflecting boundary and a second reflecting boundary; wherein said reflecting boundaries are adapted to reflect at least some of the light within said waveguide; such that if two input light beams are incident at different angles at the same point on either of said reflecting surfaces, then those two light beams necessarily entered said waveguide at different angles; independent of the number of times, if any, that the light beam is reflected within said waveguide;



(b) the dimensions of said waveguide are sufficiently larger than the wavelength of the light generated by said light sources that the waveguide will simultaneously transmit a plurality of modes of light traveling at different angles;

(c) each of said light sources is adapted to generate light that is modulated to carry information, wherein the generated light is collimated parallel to a plane;

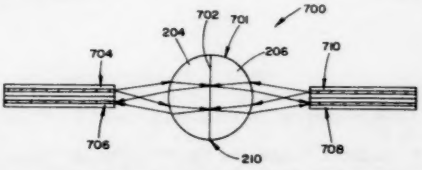
(d) each of said input ports is adapted to couple one or more of said light sources to said waveguide, at any selected angle within a range of angles, wherein each of said input ports preserves the separation of generated light having angles of different magnitude; and

(e) each of said output ports is adapted to output light transmitted by said waveguide, wherein each of said output ports preserves the separation of generated light having angles of different magnitude.

US 6,332,051 B1
BEAM SPLITTING BALL LENS, METHOD FOR ITS MANUFACTURE, AND APPARATUS FOR ITS PACKAGING

Jun Ai, Ontario, Canada; Jan Popelek, Princeton; Yao Li, Monmouth Junction, both of N.J., and Ray T. Chen, Austin, Tex., assignors to NEC Research Institute, Inc., Princeton, N.J.

Division of application No. 09/343,772, filed on Jun. 30, 1999, now Pat. No. 6,285,508. This application Sep. 18, 2000, Appl. No. 664,161.
Int. Cl. G02B *6/32*
U.S. Cl. 385—33 **6 Claims**



1. An add/drop multiplexer for downloading information of a predetermined wavelength from a plurality of wavelengths, the add/drop multiplexer comprising:

a ball lens;

a wavelength filter disposed within the ball lens for transmitting the predetermined wavelength, and reflecting the plurality of wavelengths except for the predetermined wavelength;

an input port for transmitting the plurality of wavelengths to the ball lens;

an output port for transmitting the plurality of wavelengths from the ball lens;

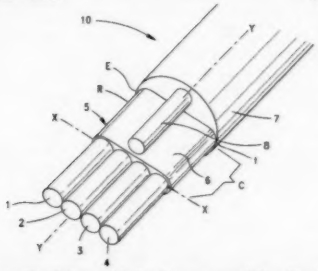
a drop port for transmitting the transmitted predetermined wavelength from the ball lens; and

an add port for adding the predetermined wavelength to the reflected wavelengths;

wherein the input, output, drop, and add ports are arranged about the ball lens such that the reflected wavelengths are transmitted to the output port, the transmitted wavelength is transmit-

ted to the drop port, and the added predetermined wavelength is transmitted to the output port.

US 6,332,052 B1
OPTICAL FIBER RIBBON CABLES WITH CONTROLLED BENDING BEHAVIOR
James P. Luther, Hickory, N.C., and Ranier Zimmer, Schalksmuhle, Germany, assignors to Corning Cable Systems LLC, Hickory, N.C.
Filed Feb. 28, 2000, Appl. No. 514,091
Int. Cl. G02B *6/44*
U.S. Cl. 385—114 **11 Claims**



1. A fiber optic ribbon cable having an overall bending behavior, comprising:

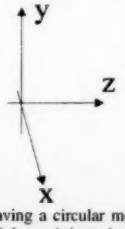
an optical fiber ribbon having optical fibers generally planarly aligned with an optical ribbon plane and surrounded by a common matrix coating having lateral edge surfaces;

a cable jacket, said cable jacket including stiffening members generally aligned with a stiffening member plane generally orthogonal to said optical ribbon plane, said cable jacket comprising an exterior profile having complementary surfaces;

said complementary surfaces being respectively disposed adjacent said lateral edges, respective thickness defined between said complementary surfaces and said lateral edge surfaces, at least one of said thickness being about 0 to 1,000 μm; and,

said optical ribbon plane and said stiffening member plane comprise respective bending moduli during cable bending that each contribute to said overall cable bending behavior.

US 6,332,053 B1
OPTICAL FIBER
Yuichiro Irie; Takeo Shimizu, and Shoichi Ozawa, all of Tokyo, Japan, assignors to The Furukawa Electric Co. Ltd., Tokyo, Japan
Continuation of application No. PCT/JP99/05256, filed on Sep. 27, 1999. This application May 5, 2000, Appl. No. 565,064.
Claims priority, application Japan, Sep. 29, 1998, 10-291525
Int. Cl. G02B *6/02*
U.S. Cl. 385—123 **14 Claims**

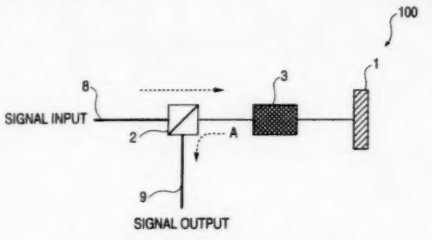


1. An optical fiber having a circular mode field which is optically connected to a light emitting element for emitting light having an elliptical mode field, the optical fiber comprising:

a first optical fiber portion having a first mode field diameter W1, the first optical fiber portion comprising a first end for receiving the emitted light and a second end for provision of the same, wherein the first end is formed in lens shape for collecting the emitted light; and,

a second optical fiber portion in optical communication with and proximate to the second end of the first optical fiber portion, the second optical fiber portion having a mode field diameter W being larger than the first mode field diameter W1.

US 6,332,054 B1
DISPERSION COMPENSATION APPARATUS
Toshiharu Ito, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 7, 2000, Appl. No. 657,838
Claims priority, application Japan, Sep. 9, 1999, 11-256313
Int. Cl. G02B *6/02*
U.S. Cl. 385—123 **14 Claims**



1. A dispersion compensation apparatus comprising:

a first polarization-maintaining optical fiber;

a second polarization-maintaining optical fiber;

a polarization beam splitter having a first port to which said first polarization-maintaining optical fiber is connected, a second port to which said second polarization-maintaining optical fiber is connected, and a third port orthogonally multiplexing linearly polarized light from said first polarization-maintaining optical fiber to said second polarization-maintaining optical fiber;

a wavelength dispersion-compensating device connected to the third port of said polarization beam splitter; and

a Faraday rotator mirror connected to said wavelength dispersion-compensating device;

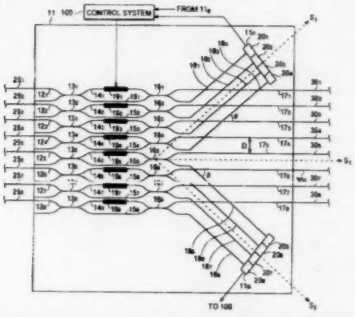
wherein signal light is input to said first polarization-maintaining optical fiber from the first portion of said polarization beam splitter with a state of polarization of the signal light made to conform to an intrinsic polarization axis of said first polarization-maintaining optical fiber, traverses said wavelength dispersion-compensating device, is reflected by the Faraday rotator mirror, traverses said wavelength dispersion-compensating device again, returns to the third port of said polarization beam splitter and is output to said second polarization-maintaining optical fiber from the second port of said polarization beam splitter.

US 6,332,055 B1

OPTICAL ATTENUATOR, PLANE WAVEGUIDE TYPE OPTICAL CIRCUIT HAVING THE SAME AND OPTICAL ATTENUATION SYSTEM HAVING THE SAME

Hitoshi Hatayama, and Eisuke Sasaoka, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 2, 2000, Appl. No. 517,521
Claims priority, application Japan, Mar. 2, 1999, 11-054287
Int. Cl. G02B 6/26
U.S. Cl. 385—140 6 Claims



1. An optical attenuator with a plurality of Mach-Zehnder-type waveguide elements arranged on a substrate, each of said plurality of Mach-Zehnder-type elements comprising:

an input optical waveguide in which a light signal propagates;

a first dimensional coupler with an incident end connected to said input optical waveguide and two exiting ends;

two optical waveguides respectively connected to said exiting ends of said first directional coupler;

a temperature regulator for regulating the temperature of at least one of said two optical waveguides;

a second directional coupler with two incident ends respectively connected to said two optical waveguides and two exiting ends;

an output optical waveguide connected to one of the exiting ends of said second directional coupler; and

an monitoring optical waveguide connected to the other of the exiting ends of said second directional coupler,

wherein the monitoring optical waveguide included in one of the Mach-Zehnder-type waveguide elements adjacent to each other within said plurality of Mach-Zehnder-type waveguide elements is arranged to cross with the output optical waveguide included in the other of the Mach-Zehnder-type waveguide element adjacent to each other.

US 6,332,056 B1

CIRCUIT ARRANGEMENT FOR PROCESSING A VIDEO SIGNAL, INCLUDING MEANS FOR AVOIDING A VERTICAL COLOR SHIFT AT HORIZONTAL COLOR TRANSITIONS

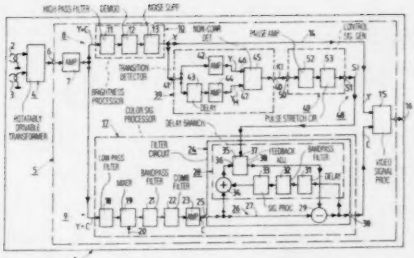
Karl Gedl, St. Pölten; Willibald Friedreich; Thomas Schuhmacher, both of Vienna, and Andreas Überreiter, Gross-Siegharts, all of Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 18, 1998, Appl. No. 195,050
Claims priority, application European Pat. Off., Nov. 20, 1997, 97890230
Int. Cl. H04N 9/77
U.S. Cl. 386—21 8 Claims

1. A circuit arrangement comprising:

input means for receiving a video signal containing a brightness component and a color component, said video signal containing a video signal segments representing vertically extending transitions in a visually observable rendition;

filter means coupled to said input means for processing one of the brightness and color components of the video signal in



conformity with a comb filter principle, said filter means including a direct branch for propagating the processable component of the video signal essentially without delay, a delay branch, including delay means for delaying the processable component of the video signal by the duration of at least one line, and combination means following the direct branch and the delay branch for combining the component of the video signal propagated essentially without delay and the delayed component of the video signal, and for outputting a comb-filtered component of the video signal;

a switching stage coupled to an output of the filter means for further processing the comb-filtered component of the video signal;

controllable influencing means for terminating the propagation of the comb-filtered component of the video signal to the switching stage, and, at the same time, for activating the propagation of this component of the video signal, in at least essentially non-filtered form, to the switching stage;

transition detection means for detecting a vertically extending transition, represented by at least one of the brightness and color components, said transition detection means, upon detection of such a transition, generating characteristic information, and including output means for outputting the characteristic information; and

connection means for connecting the output means of the transition detection means to the controllable influencing means such that, when characteristic information is output via the output means, the controllable influencing means ensures termination of the propagation of the comb-filtered component of the video signal, and activation of the propagation of this component of the video signal in at least essentially of this component of the video wherein said circuit essentially non-filtered form, wherein said circuit comprises:

control information generating means inserted in the connection means between the transition detection means and the influencing means for receiving the characteristic information generated by the transition detection means, and for generating, depending on the reception of characteristic information, control information for application to the characteristic information, control said control information enabling termination of the propagation of the comb-filtered component of the video signal and activation of the propagation of the component of the video signal in at least essentially non-filtered form for a period time which is longer than is possible by controllable influencing means using the characteristic information.

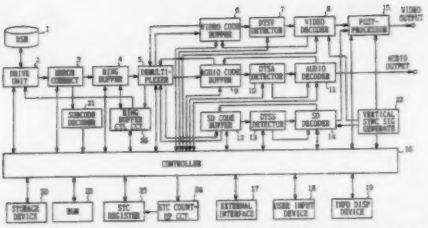
US 6,332,057 B1

DATA REPRODUCTION APPARATUS AND DATA STORAGE MEDIUM

Makoto Kawamura, and Yasushi Fujinami, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of application No. 08/495,506, filed on Oct. 6, 1995, now Pat. No. 6,151,441. This application Dec. 9, 1998, Appl. No. 207,717.
Claims priority, application Japan, Dec. 18, 1993, 5-344012
This patent is subject to a terminal disclaimer.
Int. Cl. H04N 5/91
U.S. Cl. 386—95 8 Claims

1. A data management system, comprising:



a data storage medium wherein data including at least two types of data multiplexed therein is stored, said data including said at least two types of data being operationally divided into a plurality of tracks and including a table of contents having a subsection for each of said tracks, wherein said plurality of tracks includes a title track and an end track, said title track and end track being stored in a fixed area of said data storage medium and said fixed area being allocated for storage of said title track and end track prior to the storage of any data on said data storage medium, wherein each said subsection includes a multiplexing flag for each one of said at least two types of data included therein indicating whether or not said one of said at least two types of data is included within the respective track, and wherein each said subsection includes a validity flag indicating whether or not said multiplexing flag for each said one of said at least two types of data is valid; and

data reproduction means for reproducing data from the data storage medium, the data reproduction means including readout means for reading data including said multiplexed data from said data storage medium, a plurality of decoding means for decoding said multiplexed data, control means for determining the multiplexing state of data in a predetermined data unit and for controlling said plurality of decoding means according to the multiplexing state, error detection means for detecting when said table of contents read from said data storage medium contains an error, and means for performing an error correction process on said table of contents read from said data storage medium and to repeat said error correction process at least one time if the initial performance thereof fails to correct all errors in said table of contents; wherein for each track, when said validity flag indicates that said multiplexing flag for each type of data is valid, the operation of determining the multiplexing state of data in a predetermined data unit is made on the basis of said multiplexing flag for each type of data.

US 6,332,058 B1

INFORMATION REPRODUCTION APPARATUS AND INFORMATION REPRODUCTION METHOD

Satoshi Kawakami, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 18, 1998, Appl. No. 40,969

Claims priority, application Japan, Mar. 27, 1997, 9-076072

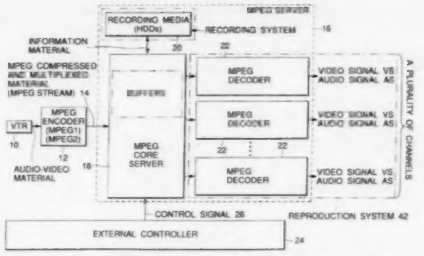
Int. Cl. H04N *5/76;5/781*

U.S. Cl. 386—111 **16 Claims**

1. An information reproduction apparatus for reading out an information material having a plurality of clips and consecutively reproducing the clips of the information material, comprising:

a recording medium on which an information material having a plurality of clips is recorded;

information material storing means, including temporary buffer means, for reading out, upon request and in sequence, a first clip and a second clip of the information material that each consist of a plurality of clusters from the recording medium, and writing the readout clips to the temporary buffer means;



write finish flag generating means for setting a write finish flag at a time point when writing of a cluster of the second clip from the recording medium to the temporary buffer means by the information material storing means is finished;

information material reproducing means for reproducing the first clip from the temporary buffer means at the same time that the second clip is being written in the temporary buffer means by the information material storing means, and including means for detecting the setting of the write finish flag and pausing reproduction of the first clip until the write finish flag is detected as having been set, so that even in a case where at least part of a last cluster of the first clip is invalid data all of the second clip will be written to the temporary buffer means.

US 6,332,059 B1

LENS-FITTED PHOTO FILM UNIT AND METHOD OF PRODUCING PHOTOGRAPHIC PRINT

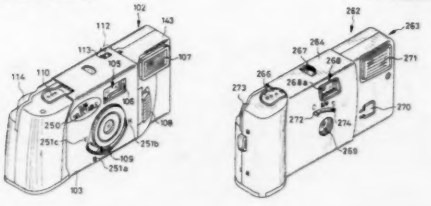
Kazuo Kamata, and Mitsuro Kamata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of application No. 09/186,682, filed on Nov. 5, 1998, now Pat. No. 6,249,652. This application Sep. 20, 2000, Appl. No. 665,705.

Claims priority, application Japan, Nov. 13, 1997, 9-311864; Dec. 18, 1997, 9-349210; Dec. 18, 1997, 9-349271; Mar. 26, 1998, 10-78857

Int. Cl. G03B *17/02;17/24;27/52*

U.S. Cl. 396—6 **2 Claims**



1. A lens-fitted photo film unit, in which a housing incorporates a mechanism for taking an exposure, and is pre-loaded with unexposed photo film, said lens-fitted photo film unit comprising:

plural optical indicia imprinted in an optical manner in positions outside each imaging frame on said photo film, said positions being different from one another, a combination of said plural optical indicia designating a printing condition for printing of said each imaging frame,

wherein said printing condition is selected from the group consisting of a color print, a sepia print and a B&W print.

US 6,332,060 B1

CAMERA WITH VIBRATION COMPENSATION DEVICE VARYING THE COMPENSATING ACTION IN ACCORDANCE WITH THE FOCAL LENGTH OF A LENS AND THE DISTANCE TO THE SUBJECT

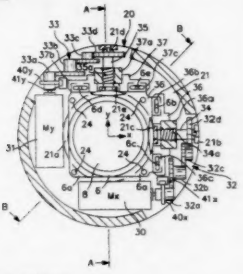
Hidenori Miyamoto, Urayasu; Yoshio Imura; Minoru Kato, both of Kawasaki; Sueyuki Ohishi, Tokyo; Nobuhiko Terui, Ichikawa, and Tatsuo Amanuma, Ageo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of application No. 08/815,681, filed on Mar. 12, 1997, now abandoned, which is a continuation of application No. 08/377,744, filed on Jan. 25, 1995, now abandoned. This application Apr. 26, 1999, Appl. No. 298,985.

Claims priority, application Japan, Feb. 4, 1994, 6-012824; Apr. 27, 1994, 6-090314

Int. Cl. G03B *17/00*

U.S. Cl. 396—55 45 Claims



1. A camera comprising:

a photographic optical system having an optical axis;

a vibration detection unit that outputs a signal indicative of vibrations in the camera;

a photographic focal length detection unit that outputs a signal indicative of a focal length of the photographic optical system;

a distance measurement unit that outputs a signal indicative of the distance to an object being photographed;

a vibration compensation unit to shift the optical axis of the photographic optical system to compensate for the vibrations detected by the vibration detection unit;

a non-volatile rewritable memory that stores a gain-adjustment value which compensates for variation in the individual outputs from the vibration detection unit; and

a correct compensating coefficient calculation unit that calculates a correct compensation coefficient based on the output of the photographic focal length detection unit, the output of the distance measurement unit, and the gain-adjustment value stored in the non-volatile rewritable memory, the correct compensation coefficient determining an amount the vibration compensation unit changes the optical axis of the photographic optical system relative to the output of the vibration detection unit.

US 6,332,061 B1

FOCUS DETECTING DEVICE AND AUTOMATIC FOCUSING CAMERA

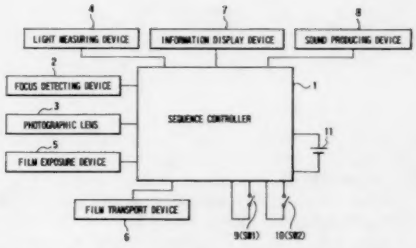
Hiroshi Arita, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 2000, Appl. No. 524,028

Claims priority, application Japan, Mar. 18, 1999, 11-073418; Mar. 19, 1999, 11-075783

Int. Cl. G03B *13/36*

U.S. Cl. 396—104 34 Claims



1. A focus detecting or distance detecting device for etecting a focusing state or a distance by detecting a phase difference of images received by and formed on a sensor having a first light receiving part composed of a plurality of pixels and a second light receiving part composed of a plurality of pixels, said focus detecting or distance detecting device comprising:

a computing circuit which computes a phase-difference relation of the images on the first light receiving part and the second light receiving part; and

a judgment circuit which judges whether the image received by and formed on the first light receiving part is a thin line close to a pixel pitch.

US 6,332,062 B1

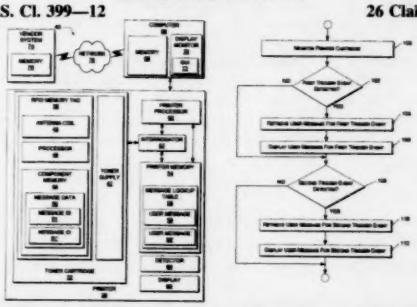
SYSTEMS AND METHODS FOR CUSTOMIZING USER MESSAGES IN A PRINTING SYSTEM

Quintin T. Phillips; Robert E. Haines; Mary B. Baumunk; Jake Heusinkveld, all of Boise, and Darius Boockholdt, Eagle, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of application No. 09/410,989, filed on Oct. 1, 1999. This application Jan. 10, 2000, Appl. No. 479,957.

Int. Cl. G03G *15/00;15/08*

U.S. Cl. 399—12 26 Claims



1. In a printing device having memory and using a replaceable component with integrated component memory, a method comprising:

detecting a first trigger event;

retrieving a first message identifier from the component memory;

accessing a message lookup table that contains a plurality of user messages;

locating a first user message in the message lookup table, the first user message corresponding to the first message identifier;

displaying the first user message via a user interface;

detecting a second trigger event;

retrieving a second message identifier from the component memory;

accessing the message lookup table;

locating a second user message in the message lookup table, the second

user message corresponding to the second message identifier;

displaying the second user message via the user interface; and

wherein the first message identifier and the second message identifier include information that identifies a location of the message lookup table.

US 6,332,063 B1

IMAGE FORMING APPARATUS WITH RESIDUAL TONER DETECTION AND COLLECTION FEATURES

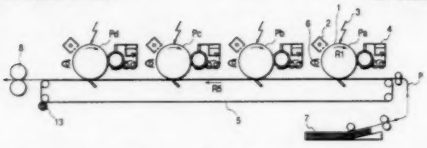
Ichiro Ozawa, Funabashi; Masaru Hibino, Minami Ashigara, and Masanori Shida, Shizuoka-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 2000, Appl. No. 536,306

Claims priority, application Japan, Mar. 31, 1999, 11-093543

Int. Cl. G03G *15/00*

U.S. Cl. 399—27 **15 Claims**



1. An image forming apparatus comprising:

a plurality of image bearing members;

a plurality of image forming means for forming images having colors different from each other on each of said image bearing members,

wherein each of said image forming means includes developing means for developing an electrostatic image formed on said image bearing member with a developer including a toner and carrier, and

wherein toner remaining on each of said image bearing members is collected in a corresponding one of said developing means after the image on each of said image bearing member is transferred on a common recording material,

a plurality of detecting means for detecting information corresponding to a density of the developer in each of said developing means; and

control means for controlling an amount of the developer with which each of said developing means is replenished according to an output of each of said detecting means,

wherein each of said detecting means detects information corresponding to a permeability of the developer.

US 6,332,064 B1

IMAGE FORMING APPARATUS INCLUDING A CHARGING POWER SUPPLY AND A NEUTRALIZING DEVICE

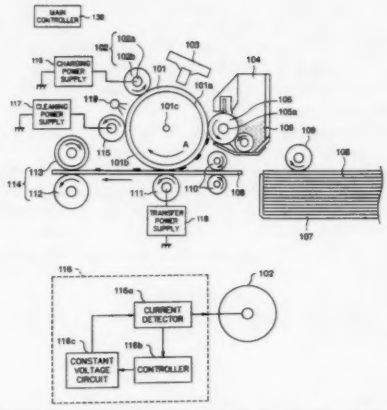
Hiroaki Sato; Kenichi Ashida; Kimihide Ishizaki, and Koji Ida, all of Tokyo, Japan, assignors to Oki Data Corporation, Tokyo, Japan

Filed Jul. 2, 1999, Appl. No. 347,063

Claims priority, application Japan, Jul. 6, 1998, 10/190364; Mar. 31, 1999, 11/091885

Int. Cl. G03G *15/02;15/16;21/00*

U.S. Cl. 399—50 **20 Claims**



1. An electrophotographic image forming apparatus in which an electrostatic latent image is developed with toner into a toner image and the toner image is transferred to a recording medium, the apparatus comprising:

an image bearing body having an electrostatic latent image formed thereon;

a charging member in contact with said image bearing body, said charging member charging said image bearing body when said charging member receives a voltage;

a detector, detecting a characteristic of said charging member when the electrostatic latent image is not being formed and outputting a detection signal indicative of the characteristic;

a charging power supply, applying the voltage to said charging member, the voltage having a value in accordance with the detection signal; and

a neutralizing device, neutralizing the charge from said image bearing body before said detector detects the characteristic of said charging member, and not neutralizing the charge from said image bearing body when the electrostatic latent image is being formed.

US 6,332,065 B1

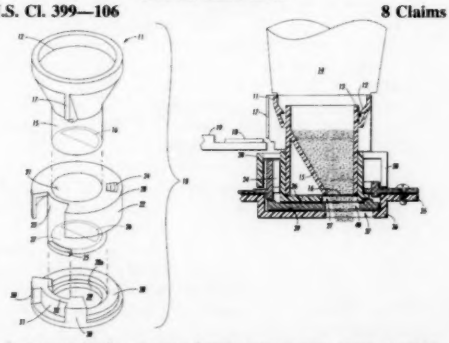
CRU/TONER BOTTLE CONNECTOR ASSEMBLY

John Leroy Howard, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 17, 2000, Appl. No. 713,862

Int. Cl. G03G *15/08*

U.S. Cl. 399—106 **8 Claims**



1. A toner bottle connector/toner compartment cover assembly for removably attaching a toner-dispensing bottle having a dispensing end to a toner-receiving compartment of an electrographic printing machine while avoiding spillage of toner, said assembly comprising:

(a) a toner bottle connector means comprising a funnel means having an inlet end comprising a wall which is fastenable to the dispensing end of a toner-supply bottle, and having a cylindrical bottom outlet end having an offset port;

(b) an intermediate docking ring member comprising a cylindrical body having a radial annular flange extending outwardly from the top area thereof and having a radial flange segment extending outwardly from the bottom outlet end thereof, the bottom outlet end of the cylindrical body having an offset outlet port, and the cylindrical outlet end of said funnel means being rotatably received within the cylindrical body of the

docking ring member to align the offset outlet ports of said connector means and said docking ring member, and

(c) an annular mounting ring element which is attachable over the opening of a toner-receiving compartment which is sealed by a rotatable sealing disk having an offset inlet opening, said ring element having a central opening surrounded by a cylindrical inner wall having a vertical slot formed therein, whereby the cylindrical body of said docking ring member is insertable within the central opening of said mounting ring element, with the radial flange segment passing through said vertical slot to a position underlying the cylindrical inner wall of said mounting ring element, whereby the docking ring member is rotatable within the mounting ring element to rotate the sealing disk of the toner receiving compartment to open position, so that the docking ring member and the mounting ring element must be relatively rotated to rotate the sealing disk and to align the offset ports of the docking ring member and of the rotated sealing disk, and thereafter the connector means and the docking ring member must be relatively rotated to align the offset ports thereof, to permit gravity supply of toner from the toner supply bottle into the toner receiving compartment.

US 6,332,066 B1

MULTICOLOR IMAGE FORMING METHOD AND APPARATUS USING AN INTERMEDIATE TRANSFER BELT AND APPARATUS HAVING PLURAL DEVELOPING UNITS FOR THE SAME

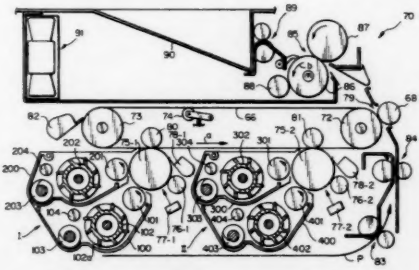
Nobuyuki Yanagawa, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 16, 1997, Appl. No. 951,521

Claims priority, application Japan, Oct. 16, 1996, 8-273350; Nov. 25, 1996, 8-313654; Sep. 26, 1997, 9-261753

Int. Cl. G03G *15/01*

U.S. Cl. 399—302 **49 Claims**



1. A multicolor image forming apparatus comprising:

at least first and second image forming means spaced from each other by a preselected distance, said first image forming means including a first image carrier and first developing means for developing a latent image electrostatically formed on said first image carrier by use of a developer of first color, said second image forming means including a second image carrier and second developing means for developing a latent image electrostatically formed on said second image carrier by use of a developer of second color;

an intermediate transfer belt to which toner images respectively formed on said first and second image carriers by said first and second developing means are transferred, said first and second imge forming means being arranged below and along a single run of said intermediate transfer belt; and

transferring means for transferring the toner images from said intermediate transfer belt to a recording medium.

US 6,332,067 B1

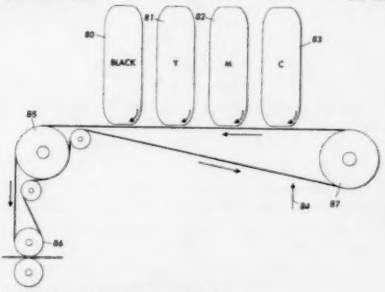
PASSIVE MANAGEMENT OF TRANSFUSE BELT TEMPERATURE DISTRIBUTION

Gerald A. Domoto, Briarcliff Manor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 3, 2000, Appl. No. 705,264

Int. Cl. G03G *15/20;15/16*

U.S. Cl. 399—307 **31 Claims**



1. A printing apparatus comprising:

a toner image producing station for forming a toner image and having an image bearing member for supporting the toner image; and

a transfuse station for simultaneously transferring and fusing the toner image to a substrate, the transfuse station including:

(i) a transfuse member;

(ii) a heating roll adapted to heat the transfuse member;

(iii) a cooling roll adapted to cool the transfuse member; and

(iv) at least one rotary phase change roll adapted to both heat and cool the transfuse member, each of the heating, cooling and phase change rolls adapted to move the transfuse member.

US 6,332,068 B2

PRINT RECORDING APPARATUS HAVING MODULAR AUTODUPLEX MECHANISM

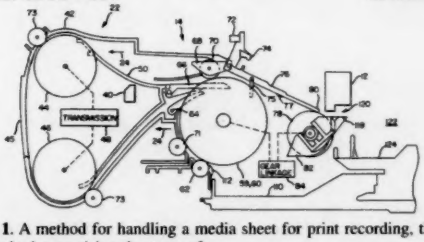
Jeffrey R. Blackman, Vancouver; Thomas W. Ruhe, La Center; Larry A. Jackson; Thomas E. McCue, Jr., both of Vancouver, and Kevin O'Hara, Washangal, all of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of application No. 09/283,107, filed on Mar. 31, 1999, now Pat. No. 6,167,231. This application Dec. 18, 2000, Appl. No. 740,659.

This patent is subject to a terminal disclaimer.

Int. Cl. G03G *15/00*

U.S. Cl. 399—364 **33 Claims**



1. A method for handling a media sheet for print recording, the method comprising the steps of:

feeding the media sheet along a first media path from a feed roller onto a metering roller and into a print zone for print recording onto a first side of the media sheet;

as the media sheet moves through the print zone, stopping rotation of the metering roller while a trailing edge of the media sheet is gripped by the metering roller;

reversing rotation of the metering roller;

moving the media sheet back along the first media path from the metering roller to the feed roller;

feeding the media sheet from the feed roller onto a set of duplex media handling rollers;44,46

moving the media sheet with the duplex media handling rollers along a loop media path;

feeding the media sheet from the duplex media handling rollers back onto the feed roller and along the first media path into the print zone for print recording onto a second first side of the media sheet.

US 6,332,069 B1

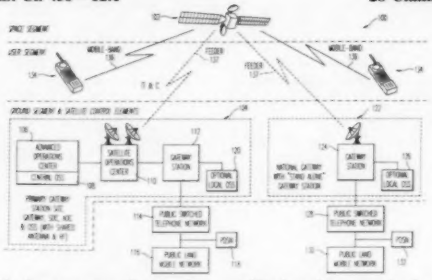
APPARATUS AND METHOD FOR GROUPING CARRIERS TO MINIMIZE THE OCCURRENCE OF CALL BLOCKING IN A SATELLITE-BASED COMMUNICATIONS NETWORK

Wei Zhao, Germantown; Steven Arnold, Ijamsville, both of Md.; Anthony Noerpel, Lovettsville, Va., and Dave Roos, Boyds, Md., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Filed Feb. 10, 1999, Appl. No. 244,970

Int. Cl. H04B *7/185*

U.S. Cl. 455—12.1 **28 Claims**



1. An apparatus, for use in a satellite-based communications network, for grouping a plurality of carriers of a carrier resource pool assigned to a spot beam generated by a satellite in said network, and over which signal bursts are transmitted between said satellite and at least one user terminal located in a coverage area of said spot beam, said apparatus comprising:

a spot beam segregator which segregates said coverage area into at least one offset zone based on respective propagation time periods required for signals to travel between said satellite and respective different locations in said coverage area; and

a carrier grouper which groups said carriers into an amount of carrier groups corresponding to an amount of said at least one offset zone, and assigns each of said carrier groups to service a respective one of said at least one offset zone.

US 6,332,070 B1

METHOD AND DATA RECEIVER DEVICE FOR RECEPTION OF A RADIO SIGNAL CONTAINING CORRECTION DATA FOR A GLOBAL NAVIGATION SATELLITE SYSTEM

Harald Bochmann, Hanover, and Volkmar Tanneberger, Hildesheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

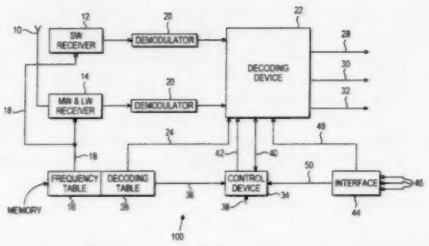
Filed Aug. 6, 1999, Appl. No. 369,512

Claims priority, application Germany, Aug. 14, 1998, 198 36 966

Int. Cl. H04Q *7/32*

U.S. Cl. 455—12.1 **17 Claims**

1. A data receiver device for reception of radio signals containing correction data for a global navigation satellite system, said data receiver device comprising a frequency table of frequencies of



at least two different sources of said radio signals; and a decoding table for said radio signals from said at least two different sources of said radio signals.

US 6,332,071 B1

INTEGRATED ANTENNA SWITCH HAVING AMPLIFIER

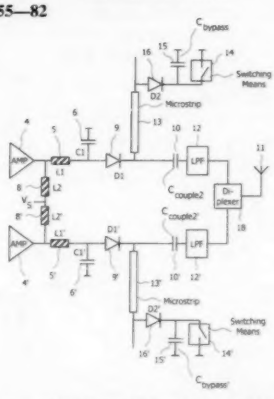
Per-Olof Brandt, Staffanstorp, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Apr. 6, 1999, Appl. No. 287,564

Claims priority, application Sweden, Apr. 7, 1998, 9801209

Int. Cl. H04B *1/44*

U.S. Cl. 455—82 **7 Claims**



1. An antenna switch comprising at least one signal path, including amplifier means coupled to respective switching means, said amplifier means comprising an amplifier having an output terminal that is connected to a first terminal of a first inductor, a second terminal of the first inductor being connected to a first terminal of a first capacitor, a second terminal of the first capacitor being grounded, said amplifier being voltage supplied via a choke inductor, said switching means comprising receiving isolation means having an input terminal connected to the second terminal of the first inductor and to the first terminal of the first capacitor, and an output terminal which is connected to a first terminal of a coupling capacitor, the second terminal of the coupling capacitor being connected to an antenna via a low pass filter, and a first microstrip having a first terminal connected to said first terminal of the coupling capacitor and to the output terminal of the receiving isolation means, and a second terminal connected to DC switching means, wherein said first inductor and said first capacitor together with a shorted output transistor of said amplifier form a high impedance in a receiving mode, thereby not affecting the receiving signal in the receiving mode, and said receiving isolation means is a signal wire.

US 6,332,072 B1

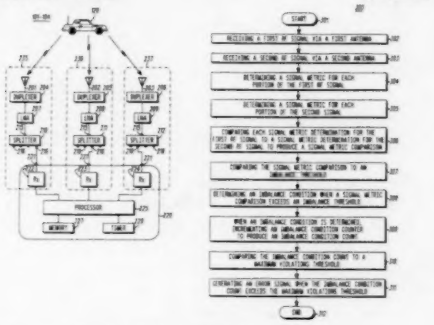
METHOD AND APPARATUS FOR DETECTING FAILURES IN A COMMUNICATION DEVICE BV SIGNAL METRICS

Christopher L. Johnson, Chicago; Daniel S. Flondro, Algonquin, and Timothy J. Schmeltz, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 24, 1999, Appl. No. 317,512

Int. Cl. H04B *1/06;7/00;* **H04Q** *3/26;* **H04L** *1/00;12/26*

U.S. Cl. 455—277.1 **13 Claims**



1. A communication device comprising:

a receiver section comprising a plurality of radio frequency (RF) input ports, a receiver, and a processor for determining a signal metric of an RF signal available on each input port of the plurality of RF input ports;

an antenna system coupled to the plurality of RF input ports for coupling thereto the received RF signal, the antenna system comprising a plurality of antennas, wherein the plurality of antennas comprises:

a first antenna for coupling a first RF signal to a first input port of the plurality of input ports;

a second antenna for coupling a second RF signal to a second input port of the plurality of input ports; and

wherein the processor determines a signal metric of each portion of a plurality of portions of the first RF signal, determines a signal metric of each portion of a plurality of portions of the second RF signal, compares each signal metric determination of the first RF signal with a signal metric determination of the second RF signal to produce a plurality of signal metric comparisons, compares each signal metric comparison of the plurality of signal metric comparisons to an imbalance threshold to produce a plurality of performance comparisons, and generates an error signal based on the plurality of performance comparisons.

US 6,332,073 B1

EMERGENCY NUMBER DIALING FROM A FIXED CELLULAR TERMINAL

Ulf Tomas Weine Nilsson, Stockholm, Sweden; Hussein Abbas Alayan, Morrisville, and Jeffrey A. Armantrout, Cary, both of N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Oct. 19, 1998, Appl. No. 174,994

Int. Cl. H04M *11/00*

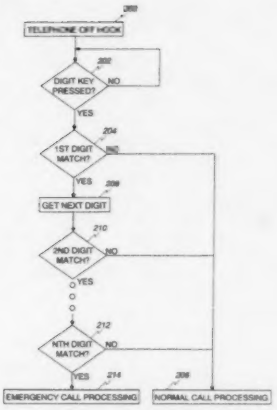
U.S. Cl. 455—404 **14 Claims**

1. A method for use in a fixed cellular unit requiring an action by the cellular unit or a user of the cellular unit after dialing a number to initiate an outgoing call to said number, said method screening outgoing calls for an emergency number comprising a plurality of digits, said method comprising:

(a) receiving a first dialed digit;

(b) comparing the first dialed digit to the first digit of the emergency number;

(c) if the first dialed digit matches the first digit of the emergency number, receiving a next dialed digit;



(d) comparing the next dialed digit to the next digit of the emergency number;

(e) repeating step (d) until either the next dialed digit does not match the next digit of the emergency number or the dialed digits match all of the digits of the emergency number;

(f) inhibiting said cellular unit from initiating the acquisition of a communication channel an outgoing call while performing steps (a) through (e), and

(g) responsive to receipt of dialed digits matching all of the digits of the emergency number, bypassing said action required to initiate an outgoing call and immediately setting up an emergency cellular call.

US 6,332,074 B1

NONREUSABLE CELLULAR TELEPHONE AND METHOD OF MAKING CELLULAR TELEPHONE CALLS

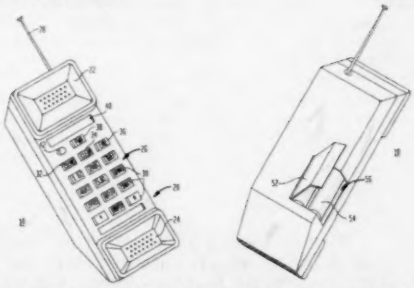
Robert E. Spitaletta, 16 Stonehouse Rd., Glen Ridge, N.J. 07028, and Edward C. Spitaletta, 85 Main St., Hackensack, N.J. 07601

Continuation of application No. 08/692,533, filed on Aug. 6, 1996, Provisional application No. 60/009,541, filed on Dec. 29, 1995. This application May 4, 2000, Appl. No. 564,755.

This patent is subject to a terminal disclaimer.

Int. Cl. H04M *11/00;1/66*

U.S. Cl. 455—407 **18 Claims**



1. A method of making a plurality of phone calls using a cellular phone which is nonresettable and permanently rendered inoperative after the expiration of a predetermined period of calling time, the cellular phone comprising a preprogrammed one-time predetermined period of calling time deductible from the cellular phone during cellular communications and a microprocessor operative to control the operation of the cellular phone, said method comprising:

(a) conducting first cellular communications with the cellular phone for a limited duration less than said predetermined period of calling time;
(b) automatically deducting a first amount of calling time from said predetermined period of calling time corresponding to the duration of said first cellular communications such that the user can make one or more additional calls without regard to when said first cellular communications was made and until said predetermined period of calling time is used up;
(c) conducting additional cellular communications with the cellular phone;
(d) automatically deducting an additional amount of calling time from said predetermined period of calling time corresponding to the duration of the additional cellular communications; and
(e) repeating steps (c) and (d) until said predetermined period of calling time is used up and, at such time, permanently disabling the cellular phone such that it is permanently rendered inoperative and incapable of any further use.

US 6,332,075 B1

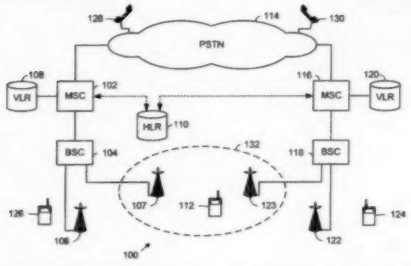
USE OF DISTINCTIVE RINGING IN A WIRELESS COMMUNICATION SYSTEM TO INFORM A CALLED PARTY OF AN INCREASED BILLING RATE

Timothy C. Verdonk, Redmond, Wash., assignor to Nortel Networks Limited, St. Laurent, Canada

Continuation-in-part of application No. 09/223,890, filed on Dec. 31, 1998. This application Mar. 29, 1999, Appl. No. 280,261.

Int. Cl. H04M *11/00*

U.S. Cl. 455—408 **20 Claims**



1. A method of operating a wireless communication system, the method comprising:
receiving a call intended for a mobile unit serviced by the wireless communication system;
determining whether the call is an increased billing rate call or a regular billing rate call based upon a comparison between an Originating Rate Center ID for the call and a current location of the mobile unit;
completing the call to the mobile unit;
if the call is an increased billing rate call, providing a distinctive ringing alert signal to the mobile unit; and
if the mobile unit accepts the call, servicing the call to completion.

US 6,332,076 B1

METHOD AND SYSTEM FOR IDENTIFYING AND ANALYZING DOWNLINK INTERFERENCE SOURCES IN A TELECOMMUNICATIONS NETWORK

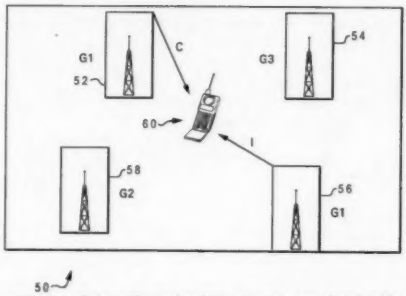
Ali R. Shah, Dallas, and Hossam H'mimy, Plano, both of Tex., assignors to Ericsson Inc., Plano, Tex.

Filed Jun. 28, 1999, Appl. No. 370,777

Int. Cl. H04Q *7/20*

U.S. Cl. 455—423 **19 Claims**

1. A method for analyzing downlink interference in a telecommunications network, said method comprising the steps of:



recording real-time channel seizure events associated with first traffic channels within a first cell associated with said telecommunications network;
identifying real-time disturbance events associated with second traffic channels within a second cell;
correlating said real-time channel seizure events with said real-time disturbance events; and
computing a disturbance distribution for said second cell by determining which ones of said real-time channel seizure events are causing ones of said real-time disturbance events within said second cell.

US 6,332,077 B1

INTELLIGENT ROAMING IN AGV APPLICATION

Chi-Kai Wu, and Yi-Shou Hsu, both of Hsinchu, Taiwan, assignors to National Datacom Corporation, Hsinchu, Taiwan

Filed Jul. 29, 1999, Appl. No. 363,548

Int. Cl. H04Q *7/20*

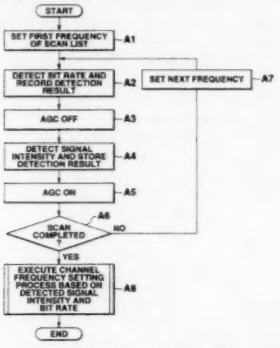
U.S. Cl. 455—432 **7 Claims**

1. A method for associating a mobile station (STA) with an access point (AP) in a wireless LAN having a plurality of APs, comprising the steps of:
pre-configuring each AP with its adjacent APs in advance according to relative locations of said plurality of APs;
downloading wireless hopping information of the adjacent APs of a currently associated AP whenever an AP is associated; and
selecting a best AP for said STA to associate with when roaming is activated, using a method including the steps of:
a. determining if a roaming direction exists for said STA;
b. selecting an AP from the adjacent APs as the best AP if a roaming direction exists and by associating with the selected AP the same roaming direction can be continued; otherwise
c. scanning the adjacent APs and selecting an AP that has a highest received signal strength as the best AP.

US 6,332,078 B1
RECEIVER DEVICE AND RECEIVING CHANNEL SETTING METHOD

Manabu Doi, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed May 18, 1998, Appl. No. 80,701
Claims priority, application Japan, May 22, 1997, 9-132384; Jun. 12, 1997, 9-154870
Int. Cl. H04Q *7/20*
U.S. Cl. 455—434 **9 Claims**



1. A receiver device capable of changing a receiving channel, comprising:

a receiver having a plurality of receiving channels each adapted to receive a respective channel signal;

a receiving channel search mode setting unit for setting a receiving channel search mode;

a candidate channel detector configured to, when the receiving channel search mode is set by said receiving channel search mode setting unit, determine whether a predetermined bit rate signal is received while scanning the receiving channels of said receiver and to detect candidate channels at which the predetermined bit rate signal is received;

a memory configured to store the candidate channels detected by said candidate channel detector;

a channel information detector configured to select at least one of the candidate channels stored in said memory based on a predetermined priority and to detect channel information included in a received signal of the at least one selected candidate channel; and

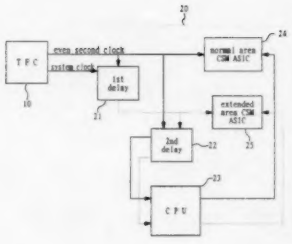
a received channel setting unit, when the channel information detected by said channel information detector is channel information of a desired channel, the received channel setting unit is configured to set the channel including the channel information of the desired channel as the receiving channel of said receiver.

US 6,332,079 B1
SERVICE AREA EXPANSION METHOD FOR MOBILE COMMUNICATION SYSTEM AND METHOD OF PROCESSING CALLS BETWEEN SERVICE AREAS

Tae-Hoon Kim, Kyonggi-do; Jae-Hoon Kim, Seoul, and Joon-Sun Uhr, Kyonggi-do, all of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyonggi-Do, Rep. of Korea

Filed Mar. 16, 2000, Appl. No. 526,599
Claims priority, application Rep. of Korea, Mar. 16, 1999, 99-8778; Mar. 16, 1999, 99-8779
Int. Cl. H04Q *7/20*
U.S. Cl. 455—446 **3 Claims**

1. A service area expansion method for a mobile communication system including a TFC (time & frequency controller), a first delay for counting a system clock output from said TFC and outputting an even second clock delayed by a predetermined time in accordance with the counted value, a second delay for delaying said even second clock and said delayed even second clock output from said first delay, respectively, and generating a first and a second interrupt signals of 80 msecond ticks, a CPU for generating an interrupt using said first and second interrupt signals generated from said second delay and generating a first and a second enable signals, a normal area CS;M ASIC which is enabled by the said enable signal output from said CPU, operates in accordance with said even second clock output from said TFC, and processes a call of a mobile terminal in said normal area, and an extended area CSM ASIC which is enabled by said second enable signal output from said CPU, operates in accordance with said delayed even second clock output from said first delay, and processes a call of a mobile terminal in said extended area, said method comprising:



a first step of initializing said normal area CSM ASIC using said even second clock output from said TFC, said extended area CSM ASIC using said delayed even second clock output from said first delay in accordance with a re-synchronization command for said normal area CSM ASIC and extended area CSM ASIC and which is output from said CPU, receiving from a control station a configuration for channel allocation for each CSM ASIC, and determining whether a channel to be allocated is a traffic channel or an access channel;

a second step of setting up a pair of said two CSM ASICs to a traffic channel or an access channel if said channel to be allocated is determined as a traffic channel or an access channel in said first step, and advancing a forward timing by a delayed reference clock; and

a third step of setting up only said normal area CSM ASIC to a corresponding channel if said channel to be allocated is not determined as a traffic channel or an access channel in said first step.

US 6,332,080 B1
PROCESS FOR CONTROLLING THE ESTABLISHMENT AND OPERATION OF PATHS OF TRANSMISSION (BEARERS) IN A WIRELESS TELECOMMUNICATION SYSTEM, IN PARTICULAR IN A DECT-SPECIFIC RLL/WLL SYSTEM BOUND INTO AN ISDN-SYSTEM AS A LOCAL INFORMATION TRANSMISSION LOOP

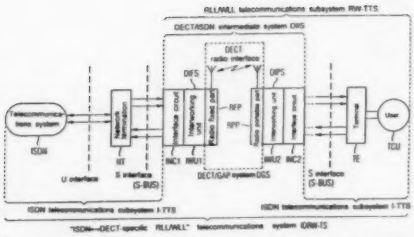
Martin Kordsmeyer, Hörstel, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE97/01144, § 371 Date Dec. 9, 1998, § 102(e) Date Dec. 9, 1998, PCT Pub. No. WO97/50273, PCT Pub. Date Dec. 31, 1997
PCT Filed Jun. 6, 1997, Appl. No. 202,165
Claims priority, application Germany, Jun. 24, 1996, 196 25 161
Int. Cl. H04Q *7/20*
U.S. Cl. 455—450 **15 Claims**

1. A method for controlling setting up and use of transmissions paths between radio transmitting/radio receiving devices in wire-free telecommunications systems, comprising the steps of:

a) setting up transmission paths between a first radio transmitting/radio receiving device and a second radio transmitting/radio receiving device in a telecommunications system;

b) assigning the transmission paths transmission path numbers;



c) transmitting system-specific messages on the transmission paths in transmission channels with channel-specific transmission capacities;

d) setting up via the radio transmitting/radio receiving devices a first transmission path for transmitting the system messages in a first transmission channel with a first channel-specific transmission capacity, such that the first transmission path is reserved, in a predetermined order, a first transmission path number, as to initiate and realize a change of channel on the first transmission path.

US 6,332,081 B1

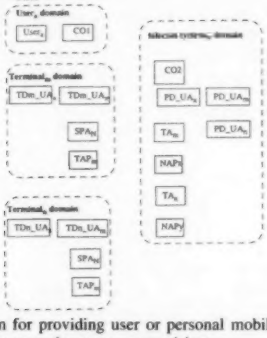
ARRANGEMENT FOR IMPROVING AVAILABILITY OF SERVICES IN A COMMUNICATION SYSTEM

Thanh Van Do, Oslo, Norway, assignor to Telefonaktiebolaget LM Ericsson (publ), Stockholm, Sweden

Continuation of application No. PCT/NO98/00108, filed on Apr. 2, 1998. This application Oct. 5, 1999, Appl. No. 413,216. Claims priority, application Norway, Apr. 8, 1997, 971605

Int. Cl. H04Q *7/20*

U.S. Cl. 455—461 **4 Claims**



1. A system for providing user or personal mobility in a communications system, the system comprising:

a first user in a user domain, wherein the first user is using a first terminal;

said first terminal, second and third terminals being in a terminal domain;

a Telecom domain;

wherein user mobility support is implemented by use of a plurality of different agents for each user on the first terminal, wherein a first agent PD_UA_u for the first user is located in the Telecom domain and at least a second agent $TD_m\_UA_u$ for the first user is located at said first terminal in the terminal domain, and wherein the first and second agents collaborate in order to enable interactions involving the first user, and wherein said first user can use each of said first and second terminals at the same time by having the first user's agent $TD_m\_UA_u$ on the first and second terminals at the same time; and

wherein said second agent $TD_m\_UA_u$ for the first user and a third agent for a second user are at said first terminal such that multiple agents for respective different users are at said first terminal, so that the first and second users can use/share said first terminal at the same time.

US 6,332,082 B1

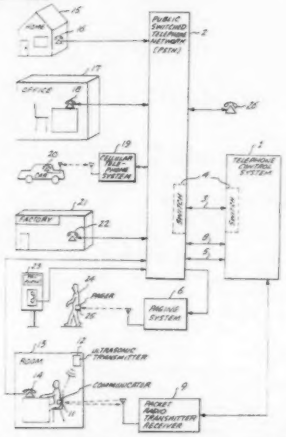
PERSONAL COMMUNICATOR TELEPHONE SYSTEM

Robert M. Fuller, Redmond; Frederick A. Epler, Issaquah, and Maxwell E. Manowski, Enumclaw, all of Wash., assignors to Aspect Telecommunications Corporation, San Jose, Calif.

Division of application No. 08/447,751, filed on May 23, 1995, now Pat. No. 6,026,153, which is a division of application No. 08/249,453, filed on May 26, 1994, which is a division of application No. 07/480,242, filed on Feb. 15, 1990, now Pat. No. 5,375,161, which is a continuation-in-part of application No. 07/439,601, filed on Nov. 21, 1989, now abandoned, which is a continuation-in-part of application No. 06/841,931, filed on Mar. 20, 1986, now Pat. No. 4,893,335, which is a continuation-in-part of application No. 06/650,821, filed on Sep. 14, 1984, now abandoned. This application Oct. 8, 1999, Appl. No. 415,090.

Int. Cl. H04Q *7/20*

U.S. Cl. 455—461 **19 Claims**



1. A personal telecommunications system, comprising:

a telephone switching network connected to a plurality of telephones at locations designated by system subscribers;

a personal transceiver assigned to each of the system subscribers, each said personal transceiver including a personal transmitter, a keypad by which associated subscriber can formulate a subscriber instruction signal, and a personal receiver;

at least one fixed transmitter which emits a fixed transmitter signal within a transmission range of the fixed transmitter, the fixed transmitter signal being recognizable by the personal receiver of the personal transceiver, the personal transceiver responding to the fixed transmitter signal with a personal transmitter signal emitted by the personal transmitter, the personal transmitter signal being received by a fixed receiver; the fixed receiver outputting a subscriber location signal indicating that the subscriber is present within the range of the fixed transmitter to receive an incoming call dialed to a personal telephone number assigned to a specific subscriber and forwarded to the telephone in proximity to the fixed transmitter designated by the subscriber location signal; the personal transmitter signal being further adapted for containing the subscriber instruction signal specifying an alternate manner of handling the incoming call placed by the caller to the personal telephone number of the subscriber;

a telephone control system receiving the subscriber location signal, the subscriber instruction signal and the incoming call

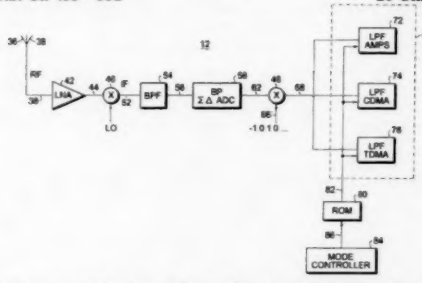
placed by the caller to the personal phone number assigned to the specific subscriber; said telephone control system selectively forwarding the received incoming call to the subscriber by routing the incoming call through telephone switching network to the telephone in proximity to the fixed transmitter indicated by the received subscriber location signal, or handling the incoming call in the manner specified by the subscriber, in response to the received subscriber instruction signal transmitted by the personal transmitter.

US 6,332,083 B1

APPARATUS AND ASSOCIATED METHOD, FOR OPERATING ON RECEIVE SIGNALS RECEIVED AT A RECEIVER

Zhongming Shi, San Diego, and Ken Hsu, Irvieg, both of Calif., assignors to Nokia Mobile Phones Limited, Espoo, Finland

Provisional application No. 60/079,834, filed on Mar. 30, 1998. This application Mar. 30, 1999, Appl. No. 281,522.
Int. Cl. H04B *1/38;1/10*
U.S. Cl. 455—552 **20 Claims**



1. In a multi-mode radio receiver operable to receive first receive signals generated during operation of a first radio communication system and to receive at least second communication signals generated during operation of at least a second radio communication system, the first radio communication system operable within a first frequency bandwidth and the second radio communication system operable within a second frequency bandwidth, an improvement of apparatus for operating upon signals generated during operation of the first radio communication system and signals generated during operation of at least the second communication system, said apparatus comprising:

a converter coupled to receive indications of the first receive signals when received at the radio receiver and to receive indications of the at least the second receive signals when received at the radio receiver, said converter for converting the indications received thereat to a first-converted frequency range, selectively to form first-converted first receive signals of the first frequency bandwidth and selectively to form at least first-converted second receive signals of at least the second frequency bandwidth; and

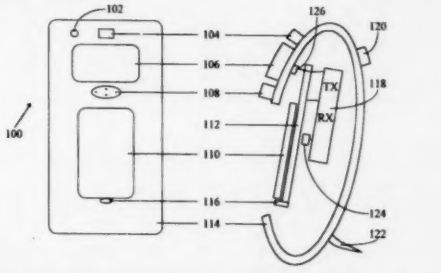
a bandpass digitizer coupled to said converter to receive the first-converted first receive signals and the at least the first-converted second receive signals selectively formed by said converter, said bandpass digitizer for generating digitized signals in which noise component portions generated pursuant to digitizing of the first-converted first receive signal and the first-converted second receive signal, once digitized, are shifted in frequency.

US 6,332,084 B1

MULTIPLE MODE WIRELESS TELEPHONE

Gad Shaanan, Westmount; Francois Duval, Terrebonne, and Ivan Brousseau, Montreal, all of Canada, assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Oct. 9, 1999, Appl. No. 415,610
Int. Cl. H04B *1/38*
U.S. Cl. 455—556 **22 Claims**



12. A method for using a wireless telephone (**100**), wherein the wireless telephone (**100**) includes:

a) a transceiver (**118**);

b) a microphone (**116**), a monitor (**106**), and a speaker (**104**), all connected to the transceiver (**118**); and

c) a navigation key (**108**) which:

i) is connected to the transceiver (**118**); and

ii) lies substantially coplanar with a face of the monitor (**106**);

and wherein the method is characterized in that the method includes:

d) sliding a touch-screen-cover (**110**), which lies between and substantially parallel to a face of the monitor (**106**) and a face of a touch screen, between

i) a closed position, in which it covers the face of the touch-screen; and

ii) an open position, in which it exposes the face of the touch-screen (**112**) and lies substantially behind the face of the monitor (**106**);

e) detecting:

i) a touch-screen-cover (**110**) position;

ii) touches on a touch-screen; and

iii) depressions of the navigation key (**108**); and

f) entering different modes of operation of the microphone (**116**), monitor (**106**), speaker (**104**), and touch-screen (**112**) in response to such detection.

US 6,332,085 B1

INTEGRATED TELECOMMUNICATION SYSTEM AND METHOD WITH VOICE MESSAGING AND LOCAL AREA PAGING

Dan A. Hanson, Dallas, Tex., and Kirk Topits, Roswell, Ga., assignors to Teleco, Inc., Greenville, S.C.

Filed Dec. 5, 1997, Appl. No. 985,981
Int. Cl. H04B *1/38*
U.S. Cl. 455—557 **44 Claims**

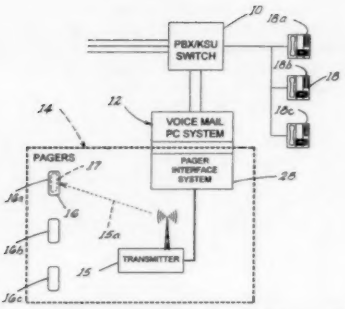
1. An integrated telecommunication system having local paging capability comprising:

a telephone system having a private branch exchange connected to at least one outside telephone line for receiving an incoming call;

a plurality of individual telephone extensions connected to said private branch exchange;

a voice mail system connected to said private branch exchange having a computer with a set of computer readable instructions for receiving said incoming call and routing said call to a telephone extension of a called party;

a local pager system integrated with said voice mail system, and said local pager system including a radio frequency (RF) transmitter and a plurality of individual pagers for receiving



RF activation signals transmitted by said RF transmitter under at least one specified condition;

a pager interface system integrated with said voice mail system and said local pager system; and

said pager interface system have an interface program stored in a computer readable medium on said voice mail computer, said interface program including a set of computer readable instructions responsive to said specified conditions for activating said RF transmitter in response to said incoming call to transmit said RF pager activation signal to a pager of the called party.

US 6,332,086 B2

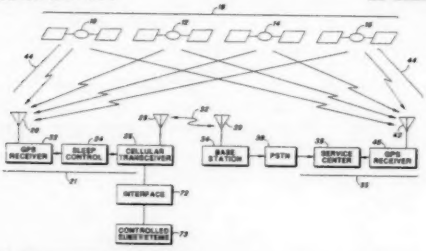
DISCONTINUOUS RECEIVE OPERATION IN A WIRELESS TERMINAL

Graham Avis, 13002 Maritime Pl., San Diego, Calif. 92130

Filed Apr. 7, 1997, Appl. No. 835,338

Int. Cl. H04Q *7/20*

U.S. Cl. 455—574 **28 Claims**



1. An apparatus comprising:

a wireless receiver that is configured to receive a signal via a wireless connection;

a time signal receiver that is configured to receive a time of day signal via a connection other than the wireless connection; and

a controller that is configured to switch said wireless receiver to and from an active mode where said wireless receiver can receive the wireless connection signal and a sleep mode in which said wireless receiver cannot receive the wireless connection signal according to a schedule,

wherein said controller determines the schedule in accordance with the time of day signal received by said time signal receiver via the connection other than the wireless connection, and

wherein a sleep mode scheduled for said wireless receiver by said controller is overridden in response to turning on of said apparatus during the scheduled sleep mode, and is overridden in response to existence during the active mode of a wireless connection in progress to said wireless receiver.

US 6,332,087 B1

ELECTROMAGNETIC IMAGING AND THERAPEUTIC (EMIT) SYSTEMS

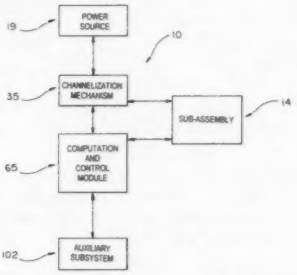
Robert H. Svenson, Charlotte, N.C.; Serguei Y. Semenov, and Vladimir Baranov, both of Moscow, Russian Federation, assignors to The Carolinas Heart Institute, Charlotte, N.C.

Continuation of application No. 08/896,525, filed on Jul. 5, 1997, now Pat. No. 6,026,173, Provisional application No. 60/021,284, filed on Jul. 5, 1996. This application Oct. 19, 1999, Appl. No. 420,660.

This patent is subject to a terminal disclaimer.

Int. Cl. A61B *5/05*

U.S. Cl. 600—407 **4 Claims**



1. A method of detecting the onset of biological tissue disease comprising the method of:

a) designating a target tissue area for electromagnetic irradiation;

b) determining expected tissue dielectric values for a designated target tissue area at frequencies above and below a relaxation frequency of the designated target tissue;

c) providing a multiple frequency radiation emitting and receiving system having emission means comprising a plurality of emitter-receiver locations, receiving means comprising a plurality of emitter-receiver locations, and signal analysis means;

d) irradiating the target tissue area with the multiple frequency radiation emitted from a plurality of emitter-receiver locations;

e) receiving the radiation from the irradiated target tissue area with microwave receiving means; and

f) analyzing the received radiation with the signal analysis means to obtain observed tissue dielectric values and comparing the observed tissue dielectric values for a desired range of frequencies best correlating to the target tissue with the expected tissue dielectric values to determine a change in the physiologic state of the target tissue indicative of an onset of tissue disease.

US 6,332,088 B1

METHOD AND APPARATUS FOR IMAGING INSTRUMENTS DURING INTERVENTIONAL MRI USING ASYMMETRIC SPIN ECHO SEQUENCES

Weigno Zhang, Foster City; Leon Kaufman, San Francisco, and Hector Avram, Foster City, all of Calif., assignors to Toshiba America MRI, Inc., Tustin, Calif.

Filed Nov. 12, 1998, Appl. No. 190,599

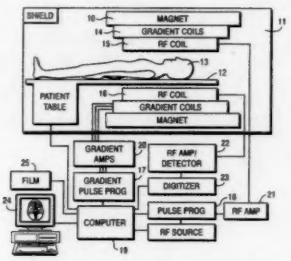
Int. Cl. A61B *5/05*

U.S. Cl. 600—410 **11 Claims**

1. A method for controlling a resultant image size of an imaged instrument produced by MRI during interventional procedures, comprising the steps of:

performing ASE imaging sequences using an MRI apparatus during an interventional procedure, said ASE sequences having a predetermined initial value, ΔTE, representing an amount of time asymmetry in an ASE sequence;

acquiring k-space data comprising MRI echo signals resulting from the ASE sequences;



converting acquired k-space data to image domain information via appropriate Fourier transformation and using the image domain information to display an image;

updating ΔTE by incrementing or decrementing the initial value by a selected predetermined amount; and

performing ASE imaging sequences using an updated value for ΔTE, wherein the updated value for ΔTE results in an increase or decrease in a resultant apparent image size of an instrument used during an interventional MRI procedure.

US 6,332,089 B1

MEDICAL PROCEDURES AND APPARATUS USING INTRABODY PROBES

David E. Acker, Setauket, N.Y.; Assaf Govari, Kiryat Haim; Maier Fenster, Petach Tikva, both of Israel, and Avishai Shapiro, Setauket, N.Y., assignors to Biosense, Inc., New Brunswick, N.J.

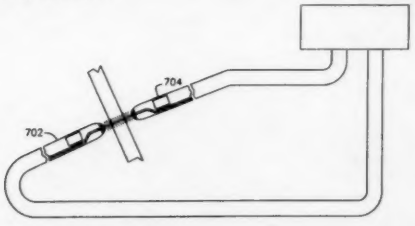
PCT No. PCT/US97/02335, § 371 Date Sep. 18, 1998, § 102(e) Date Sep. 18, 1998, PCT Pub. No. WO98/29709, PCT Pub. Date Aug. 21, 1997

Provisional application No. 60/011,721, filed on Feb. 15, 1996, Provisional application No. 60/012,275, filed on Feb. 26, 1996, Provisional application No. 60/031,824, filed on Nov. 26, 1996. This PCT application Feb. 14, 1997, Appl. No. 117,803.

Claims priority, application Israel, Aug. 26, 1996, 119137; Sep. 17, 1996, 119262

Int. Cl. A61B *5/00*

U.S. Cl. 600—424 **31 Claims**



1. A method of guiding a probe in the body of a patient comprising the steps of:

(a) providing a site probe at a site within the body of a patient and providing a instrument probe to be guided within the body of the patient;

(b) transmitting one or more non-ionizing fields to or from each of said probes and detecting each such transmitted field; and

(c) determining the relative disposition of said instrument probe and said site probe by determining a position of each said probe in a common frame of reference based upon the properties of said detected fields and determining said relative disposition based upon the so-determined positions; and

(d) directing said instrument probe toward said site probe based on relative deposition.

US 6,332,090 B1

THERMALLY ISOLATED PROBE FOR BIOMEDICAL APPARATUS AND METHOD OF COMMUNICATING ENERGY THERE THROUGH

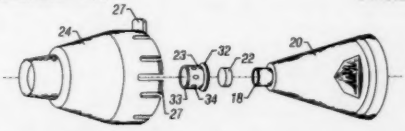
Michael P. DeFrank, Temecula, and Robert J. Rosati, Carlsbad, both of Calif., assignors to Alaris Medical Systems, Inc., San Diego, Calif.

Continuation of application No. 08/110,491, filed on Aug. 23, 1993, now abandoned, which is a continuation of application No. 07/710,385, filed on Jun. 5, 1991, now abandoned, which is a continuation of application No. 07/490,336, filed on Mar. 8, 1990, now abandoned. This application Jun. 1, 1995, Appl. No. 458,010.

This patent is subject to a terminal disclaimer.

Int. Cl. A61B *6/00;5/00;* **G01K** *1/08;* **G01J** *5/00*

U.S. Cl. 600—474 **30 Claims**



1. A hand-held biomedical apparatus adapted to communicate electromagnetic energy to an electromagnetic energy detector, the apparatus comprising:

a probe having an outer surface, a first optical opening adapted for facing the electromagnetic energy to be communicated, a second optical opening adapted for facing the electromagnetic energy detector, said first optical opening and said second optical opening defining an optical path;

a waveguide disposed in the optical path and extending between the first and second optical openings;

heat sink means for providing a heat sink in thermal contact with the waveguide;

air insulation means for providing a closed layer of air insulation between the outer surface of the probe and the waveguide along the entire length of the waveguide in the probe wherein the air insulation means comprises a removable outer boot disposed around the heat sink means, the outer boot having an inside surface separated from the heat sink means, the air insulation means providing the closed layer of insulating air between the heat sink means and the inside surface of the outer boot; and

said outer boot comprises a distal end having a distal tip portion which is involuted, the air insulation means providing a portion of the closed layer of air insulation within the involution.

US 6,332,091 B1

DIAGNOSIS OF EDEMA

David Hugh Burns; Lorenzo Leonardi, both of Montreal, and Luis Oppenheimer, Winnipeg, all of Canada, assignors to McGill University, Montreal, and University of Manitoba, Winnipeg, both of Canada

Continuation of application No. PCT/CA98/00688, filed on Jul. 16, 1998. This application Jan. 18, 2000, Appl. No. 484,244.

Claims priority, application Canada, Jul. 18, 1997, 2210791

Int. Cl. A61B *6/00*

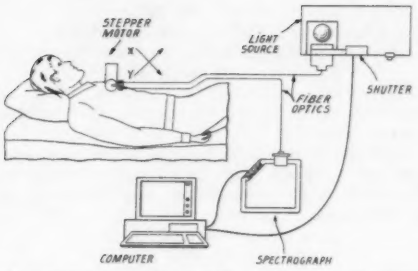
U.S. Cl. 600—475 **11 Claims**

7. An apparatus comprising:

i) a plurality of optical fibers effective to transmit infrared radiation from a source to a medium under investigation and to transmit reflected scattered radiation from said medium,

ii) a source of infrared radiation operatively associated with said fibers for transmission of infrared radiation,

iii) detector means for receiving reflected scattered radiation from said fibers and issuing signals responsive thereto, and



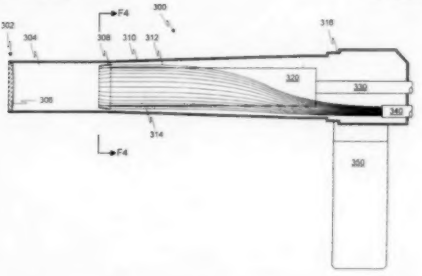
iv) evaluating means for receiving said signals and comparing the received signals with calibrated values, characterized in that said apparatus is for detecting pulmonary edema, said fibers i) are effective to transmit said infrared radiation from said source to a lung under investigation and to transmit reflected scattered radiation from the lung, and said evaluating means iv) is adapted to compare the received signals with calibrated values for pulmonary edema.

US 6,332,092 B1

OPTICAL PROBE HAVING AND METHODS FOR UNIFORM LIGHT IRRADIATION AND/OR LIGHT COLLECTION OVER A VOLUME

Curtis K. Deckert, Santa Ana, Calif.; Roger L. Hildwein, Woodinville, and Robert L. Wilcox, Bothell, both of Wash., assignors to LifeSpex, Incorporated, Kirkland, Wash.

Filed Jul. 8, 1998, Appl. No. 111,174
Int. Cl. A61B *1/07*
U.S. Cl. 600—476 **55 Claims**



1. An optical probe having a distally disposed optical window, comprising:

a light collector having an axis of light collection passing through the optical window and a focal plane generally proximate the optical window;

a light source having a light projection pattern about the axis of light collection; and

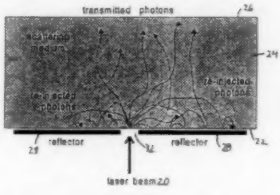
a spatial mixer having a proximal end in optical communication with the light source, a distal end in optical communication with the optical window, and an axis of light projection passing through the optical window, the spatial mixer further having a light mixing surface partially intersected by the light projection pattern of the light source to establish a distribution of irradiation ray angles proximate the optical window that has a maximum away from normal and near-normal to the axis of light projection.

US 6,332,093 B1

SCANNING MODULE FOR IMAGING THROUGH SCATTERING MEDIA

Yves Painchaud, Sainte-Marie, and Alain Mailloux, Quebec, both of Canada, assignors to Art Recherches et Technologies Avancees Inc./Art Advanced Research Technologies, Inc., Ville Saint-Laurent, Canada

Filed Aug. 6, 1998, Appl. No. 129,886
Int. Cl. A61B *6/00*
U.S. Cl. 600—476 **24 Claims**



Injection of photons at the input surface using re-injection.

10. An apparatus for imaging through scattering media, comprising:

an ultra short light pulse source disposed on a first side of said scattering media;

at least one detector disposed on a second side of said scattering media; and

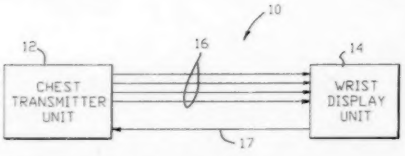
a circular re-injection reflector disposed around said at least one detector to increase an effective surface of said at least one detector.

US 6,332,094 B1

PERSONAL MONITOR AND METHOD USING IDENTIFICATION TO MINIMIZE INTERFERENCE

Peter Gregory Gorman, Lakeview Dr., Mahopac, N.Y. 10541

Continuation of application No. 09/263,763, filed on Mar. 4, 1999, which is a continuation of application No. 08/684,302, filed on Jul. 18, 1996, now Pat. No. 5,913,827, which is a continuation of application No. 08/380,370, filed on Jan. 30, 1995, now Pat. No. 5,538,007, which is a continuation of application No. 08/065,564, filed on May 21, 1993, now Pat. No. 5,394,879, which is a continuation-in-part of application No. 08/033,826, filed on Mar. 19, 1993, now Pat. No. 5,400,794. This application Jun. 7, 2000, Appl. No. 589,311.
Int. Cl. A61B *5/04*
U.S. Cl. 600—520 **18 Claims**



8. A heartbeat rate monitor, comprising:

a sensor for detecting a person's heartbeat signal;

circuitry connected to said sensor for using said heartbeat signal to form a pulse train having a data portion corresponding to said person's heartbeats and an identification portion indicative of identification of a transmitter-receiver pair including a transmitter for wirelessly transmitting said pulse train from said transmitter to said receiver;

a receiver for receiving said pulse train;

an identification circuit for using said identification pulses to determine if said pulse train in said receiver cam from said transmitter;

a rejection circuit for rejecting said pulse train in said receiver if said identification circuit determines that said pulse train is not from said transmitter;

a calculation circuit for calculating said hearbeat rate in said receiver using said received pulse train if said pulse train is from said transmitter; and

a display for displaying said heartbeat rate.

US 6,332,095 B1

METHOD OF EXCITING PHOTOSENSITIVE MATERIAL

Katsuro Tachibana, 6-18, Kusagae 1-chome, Chuou-ku, Fukuoka-shi Fukuoka 810-0045, and Toshiki Uchida, Room 303, 20-17, Hoshikuma 2-chome, Jounan-ku, Fukuoka-shi, Fukuoka 814-0132, both of Japan

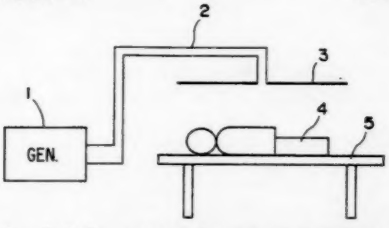
PCT No. PCT/JP98/01450, § 371 Date Nov. 16, 1998, § 102(e) Date Nov. 16, 1998, PCT Pub. No. WO98/43671, PCT Pub. Date Oct. 8, 1998

PCT Filed Mar. 30, 1998, Appl. No. 180,812

Claims priority, application Japan, Mar. 31, 1997, 9-081505

Int. Cl. A61N *1/30*

U.S. Cl. 604—20 **16 Claims**



1. A method of treatment of abnormal cells, including cancer cells, using a photosensitive chemical substance, comprising the steps of:

administering therapeutic amounts of the photosensitive chemical substance in an unexcited state, which is excitable by an electric field, such that the photosensitive chemical substance accumulates at sites of the abnormal cells; and

applying radiation at a frequency within a frequency range of radio frequencies through microwave frequencies to the abnormal cells to thereby excite the photosensitive chemical substance to cause a chemical reaction detrimental to the abnormal cells.

US 6,332,096 B1

AUGMENTATION OF ELECTRICAL CONDUCTION AND CONTRACTILITY BY BIPHASIC CARDIAC PACING

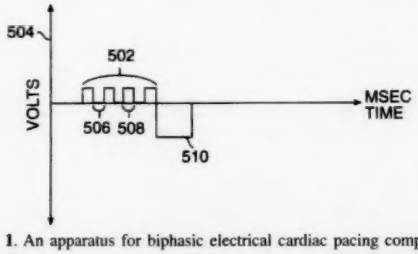
Morton M. Mower, Baltimore, Md., assignor to Mower CHF Treatment Irrevocable Trust, Baltimore, Md.

Filed Feb. 16, 2000, Appl. No. 504,710

This patent is subject to a terminal disclaimer.

Int. Cl. A61N *1/362*

U.S. Cl. 607—9 **23 Claims**



1. An apparatus for biphasic electrical cardiac pacing comprising:

means for defining a first stimulation phase with a first phase polarity, a first phase amplitude, a first phase shape and a first phase duration for preconditioning the myocardium to accept subsequent stimulation;

means for defining a second stimulation phase with a polarity opposite to the first phase polarity, a second phase amplitude that is larger in absolute value than the first phase amplitude, a second phase shape and a second phase duration; and

means for applying the first stimulation phase and the second stimulation phase in sequence to cardiac tissue.

US 6,332,097 B1

HAIR REGROWTH METHOD AND APPARATUS

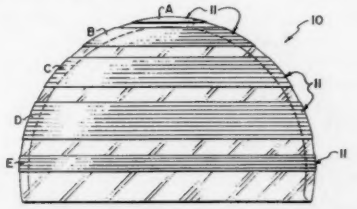
Douglas S. Beder, Vancouver, Canada, assignor to 314613 B.C. Ltd., Vancouver

Filed Feb. 4, 2000, Appl. No. 498,919

This patent is subject to a terminal disclaimer.

Int. Cl. A61N *1/00*

U.S. Cl. 607—139 **4 Claims**



1. An electrode array for a hair regrowth apparatus, said apparatus comprising voltage pulse generator means for electrical coupling to said electrode array for application thereto of a low voltage pulse train and frequency selector means for electrical coupling to said voltage pulse generator means for varying the pulse repetition frequency of said pulse train, said electrode array comprising a plurality of concentric electrically conductive rings mounted within a hood positionable over a subject's head.

US 6,332,098 B2

METHODS FOR SHIPPING FREIGHT

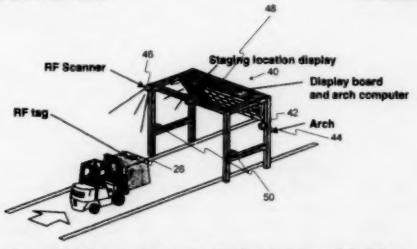
Michael J. Ross, Arlington; James E. Segars; William G. Cummings, both of Memphis, all of Tenn.; Carlos M. Barrios, Miami, Fla., and Ravishanke V. Gampa, Calgary, Canada, assignors to Fedex Corporation, Memphis, Tenn.

Provisional application No. 60/095,922, filed on Aug. 7, 1998.

This application Aug. 6, 1999, Appl. No. 369,195.

Int. Cl. G06F *7/00*

U.S. Cl. 700—226 **18 Claims**



1. A method for staging and shipping articles of freight at a transfer facility comprising the steps of:

placing on each of a plurality of articles of freight a radio frequency tag capable of receiving and storing transactional data regarding the article to which it is placed;

determining at least the approximate weight and outer dimensions of each article of freight;

transferring to and storing in said radio frequency tags transactional data representative of at least the weight, the outer dimensions, and the desired destination of the article of freight on which a respective radio frequency tag is placed;

reading transactional data from each radio frequency tags as its associated article of freight is transferred from one location to another within the facility and storing the read transactional data in one or more memory devices;

temporarily storing the articles of freight in an intermediate holding area, based on the transactional data and a programmed computer interconnected with a memory device storing said transactional data; and

sequentially loading the articles of freight, based on the transactional data and a programmed computer interconnected with a memory device storing said transactional data.

US 6,332,099 B1

GAMING MACHINE PAYOUT CONTROLLING SYSTEM AND METHOD

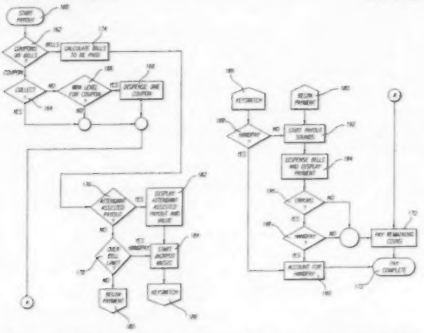
Raymond J. Heidel, Henderson; Rodney Hill, Las Vegas; Thomas N. Taxon, Henderson, and Lawerence McAllister, Las Vegas, all of Nev., assignors to Bally Gaming, Inc., Las Vegas, Nev.

Filed Mar. 11, 1998, Appl. No. 41,283

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *17/00;* **B65H** *1/08;* **G07F** *11/16*

U.S. Cl. 700—231 **25 Claims**



1. A method of dispensing a payout from a gaming machine, in a system which includes means for dispensing a payout in the form of paper tokens wherein the dispensing means are adapted to be installed in the gaming machine, and software means for controlling the dispensing means, comprising the steps of:

starting up the system; and

dispensing of the paper tokens from the dispensing means under the control of the software means.

US 6,332,100 B1

APPARATUS AND METHOD FOR MEDICATION DISPENSING AND MESSAGING

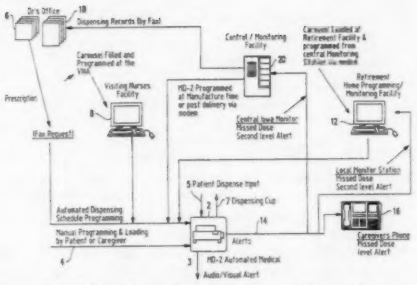
Anil Sahai, Webster City, Iowa; Stephen K. Brede, Merrimack, N.H.; Douglas A. Topliffe, Mount Vernon, N.H., and Roger Ogden Topliffe, Sunapee, N.H., assignors to Interactive Medical Developments, L.C., Webster City, Iowa

Continuation-in-part of application No. 09/046,644, filed on Mar. 24, 1998, now Pat. No. 5,971,594. This application Oct. 5, 1999, Appl. No. 412,575.

This patent is subject to a terminal disclaimer.

Int. Cl. C06F *17/00*

U.S. Cl. 700—242 **10 Claims**



1. A medication dispensing system, comprising:

a digital data communication network;

a central monitoring station connected to said digital data communication network;

means for retrievably storing an audio message and for outputting an audio signal to said digital data communication network representing the stored audio message; and

an on-site medication dispensing unit, located remote from said central monitoring station, comprising:

a controller, having means for communicating through said digital data communication network with said central monitoring station, means for retrievably storing a dispensing schedule information, and means for retrievably storing a communication receiving address of a first caregiver and a communication receiving address of a second caregiver;

a plurality of canisters for storing pills;

canister support means for supportably holding said canisters;

a main enclosure means for enclosing said canister support means, said main enclosure means having a movable access cover, and having a canister dispensing port, said access cover movable to an open position for manually placing said canisters into said canister support means, and movable to a closed position for preventing manual access to said canisters;

means for generating a dispensing notification signal detectable by human senses based on said dispensing schedule;

a human interface means for receiving a manually entered dispense request signal;

means for selecting a canister from among said canisters within said canister support means based on said dispensing schedule information and for dispensing said selected canister through said canister dispense port in response to receipt of said dispense request signal within a first predetermined time after generation of said dispensing notification signal;

means for detecting a failure to receive the manually entered dispense request signal before a lapse of said first predetermined time after said generation of said dispensing notification signal;

means for transmitting a first alarm call in accordance with said stored communication receiving address of said first caregiver receiver in response to said detecting a failure;

means for receiving a first confirmation signal from said first caregiver;

means for detecting a failure to receive said first confirmation signal before a lapse of a second predetermined time after said transmitting a first alarm call to said first caregiver receiver;

means for transmitting a second alarm call in accordance with said communication receiving address of said second caregiver receiver based on said detecting a failure to receive said first confirmation signal; and

means for receiving and retrievably storing said audio signal representing the stored audio message, having means for generating an audible message corresponding to said stored audio signal.

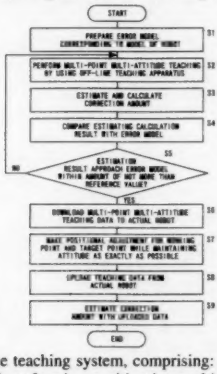
US 6,332,101 B1

OFF-LINE TEACHING METHOD FOR CORRECTING ROBOT MODEL BY REVISING TEACHING DATA ON BASIS OF DIFFERENCE BETWEEN ACTUAL AND TARGET POSITION

Masakatsu Kaneko, Hanno, and Shinji Aoki, Sayama, both of Japan, assignors to Honda Giken Kogya Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1998, Appl. No. 116,202
Claims priority, application Japan, Jul. 16, 1997, 9-191459
Int. Cl. G06F *19/00;* **G05F** *13/02*
U.S. Cl. 700—245 **7 Claims**

1. An off-line teaching method for correcting robot models to be


START
PREPARE ERROR MODEL CORRESPONDING TO MODEL OF ROBOT
S1
PERFORM MULTI-POINT MULTI-ATTITUDE TEACHING BY USING OFF-LINE TEACHING APPARATUS
S2
ESTIMATE AND CALCULATE CORRECTION AMOUNT
S3
COMPARE ESTIMATING CALCULATION RESULT WITH ERROR MODEL
S4
S5
ESTIMATION RESULT APPROACH ERROR MODEL WITHIN AMOUNT OF NOT MORE THAN REFERENCE VALUE?
NO
YES
DOWNLOAD MULTI-POINT MULTI-ATTITUDE TEACHING DATA TO ACTUAL ROBOT
S6
MAKE POSITIONAL ADJUSTMENT FOR MORNING POINT AND TARGET POINT WHILE MAINTAINING ATTITUDE AS EXACTLY AS POSSIBLE
S7
UPLOAD TEACHING DATA FROM ACTUAL ROBOT
S8
ESTIMATE CORRECTION AMOUNT WITH UPLOADED DATA
S9
END

used in an off-line teaching system, comprising:

a first step of performing multi-point multi-attitude teaching capable of obtaining the best correcting calculation result of those obtained with a logical robot model as a correction objective based on an error model corresponding to a modal of an actual robot, by using an off-line teaching apparatus;

a second step of downloading teaching data obtained in said first step from said off-line teaching apparatus to a robot controller of said actual robot as a correction objective;

a third step of revising said teaching data in said robot controller on the basis of a difference between an actual target point and an operation point of said actual robot based on said teaching data;

a fourth step of uploading teaching data obtained after said revision from said robot controller to said offline teaching apparatus: and

a fifth step of estimating and calculating a correction amount to obtain teaching data in said off-line teaching apparatus by using said uploaded data.

US 6,332,102 B1

ROBOT CONTROLLER

Hiroshi Nakajima, Itami, and Shigeru Shimogama, Kawanishi, both of Japan, assignors to Matsushita, Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 6, 1999, Appl. No. 287,182
Claims priority, application Japan, Apr. 7, 1998, 10-094328
Int. Cl. G06F *19/00*
U.S. Cl. 700—245 **14 Claims**

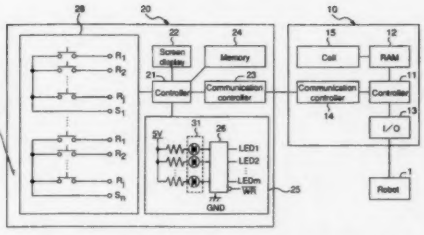
1. A robot control apparatus comprising:

an input/output device operable to communicate input/output signals with a robot;

a teaching device operable to program an operation program for a robot, said teaching device comprising

a plurality of first keys, each of said plurality of first keys operable to instruct the robot with a plurality of input/output controls through said input/output device, and

at least one second key operable to initiate performance of a series of input/output controls after the series of input/output controls have been instructed by said plurality of first keys; and



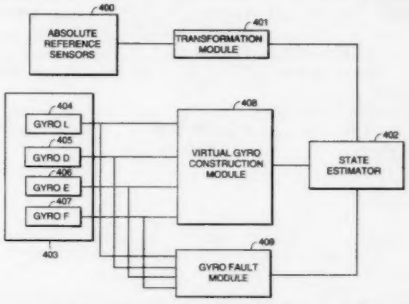
a controller operable to control the robot through said input/output device according to the input/output controls.

US 6,332,103 B1

APPARATUS AND METHOD FOR A PITCH STATE ESTIMATOR FOR A PERSONAL VEHICLE

James Henry Steenson, Jr., Derry, N.H., and Burl Amsbury, Cambridge, Mass., assignors to Deka Products Limited Partnership, Manchester, N.H.

Provisional application No. 60/142,007, filed on Jun. 30, 1999. This application Dec. 9, 1999, Appl. No. 458,148.
Int. Cl. G06F *17/00;7/00*
U.S. Cl. 701—1 **39 Claims**



1. A system for estimating a pitch state of a ground-traversing vehicle, the system comprising:

a tilt sensor connected to the vehicle producing a pitch signal representing an estimate of a pitch angle of the vehicle about an E-frame of reference;

at least one inertial reference sensor connected to the vehicle producing an inertial orientation signal about a V-Frame of reference; and

a state estimator module receiving the pitch signal and the inertial orientation signal and calculating a pitch state signal from the inertial orientation signal and the pitch signal;

wherein the pitch state signal is provided to a control loop of the vehicle for dynamically maintaining stability of the vehicle.

US 6,332,104 B1

ROLL OVER DETECTION FOR AN AUTOMOTIVE VEHICLE

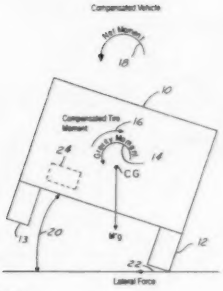
Todd Allen Brown, Dearborn, and Douglas Scott Rhode, Farmington Hills, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Dec. 21, 1999, Appl. No. 468,236
Int. Cl. B60R *21/13;* **G06F** *7/00*
U.S. Cl. 701—1 **9 Claims**

1. A rollover detection system for a vehicle rollover comprising:

a speed sensor;

a lateral acceleration sensor;



a roll rate sensor;

a yaw rate sensor; and

a controller coupled to said speed sensor, said lateral acceleration sensor, said roll rate sensor, said yaw rate sensor, said controller determining a roll angle estimate in response to lateral acceleration, roll rate, vehicle speed, and yaw rate, said controller determining, roll rate in response to a raw roll rate signal and a roll rate offset.

US 6,332,105 B1

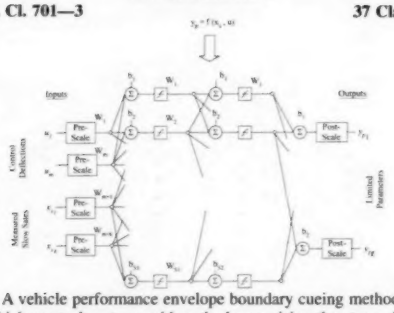
NEURAL NETWORK BASED AUTOMATIC LIMIT PREDICTION AND AVOIDANCE SYSTEM AND METHOD

Anthony J. Calise, Atlanta; Jonnalagadda V. R. Prasad, Roswell, both of Ga., and Joseph F. Horn, State College, Pa., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Provisional application No. 60/135,264, filed on May 21, 1999. This application May 22, 2000, Appl. No. 576,369.

Int. Cl. G06F *7/00*

U.S. Cl. 701—3 **37 Claims**



1. A vehicle performance envelope boundary cueing method for a vehicle control system, said method comprising the steps of:

formulating a prediction system for a neural network; and

training said neural network to predict values of limited parameters as a function of current control positions and current vehicle operating conditions.

US 6,332,106 B1

TRAIN HANDLING TECHNIQUES AND ANALYSIS

Michael J. Hawthorne, Watertown; Stephen K. Nickles, Burleson, both of N.Y., and Bolanle Onodipe, Fort Worth, Tex., assignors to New York Air Brake Corporation, Watertown, N.Y.

Filed Sep. 16, 1999, Appl. No. 397,667

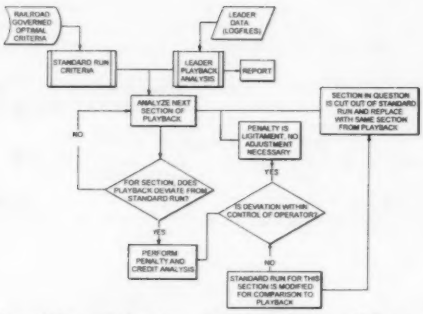
Int. Cl. B60L *3/00*

U.S. Cl. 701—19 **27 Claims**

1. A method of analyzing train handling comprising:

setting a standard for a run;

collecting train handling data from the run;


RAILROAD GOVERNED OPTIMAL CRITERIA
LEADER DATA (LOGFILES)
STANDARD RUN CRITERIA
LEADER PLAYBACK ANALYSIS
REPORT
ANALYZE NEXT SECTION OF PLAYBACK
SECTION IN QUESTION IS CUT OUT OF STANDARD RUN AND REPLACE WITH SAME SECTION FROM PLAYBACK
PENALTY IS LIGHTAMENT, NO ADJUSTMENT NECESSARY
NO
YES
FOR SECTION, DOES PLAYBACK DEVIATE FROM STANDARD RUN?
IS DEVIATION WITHIN CONTROL OF OPERATOR?
YES
NO
PERFORM PENALTY AND CREDIT ANALYSIS
STANDARD RUN FOR THIS SECTION IS MODIFIED FOR COMPARISON TO PLAYBACK

determining operating constraints during the run which are not included in the standard;

comparing the train handling data to the standard; and

modifying the comparison for the determined operating constraints.

US 6,332,107 B1

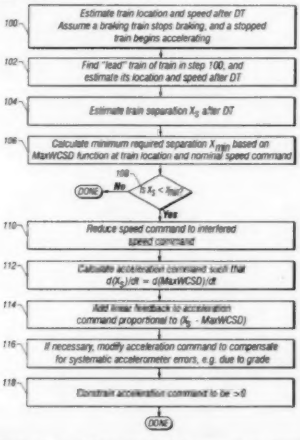
EFFICIENT HIGH DENSITY TRAIN OPERATIONS

Susanna P. Gordon, Oakland, and John A. Evans, Hayward, both of Calif., assignors to San Francisco Bay Area Rapid Transit District, Oakland, Calif.

Filed Apr. 14, 1999, Appl. No. 291,814

Int. Cl. G06F *17/00;* **G05D** *3/00*

U.S. Cl. 701—20 **8 Claims**


Estimate train location and speed after DT
Assume a braking train stops braking, and a stopped train begins accelerating
Find "lead" train of train in step 100, and estimate its location and speed after DT
Estimate train separation X_S after DT
Calculate minimum required separation X_{min} based on MaxWCSD function at train location and nominal speed command
DONE
No
Is $X_S < X_{min}$?
Yes
Reduce speed command to interfered speed command
Calculate acceleration command such that $d(X_S)/dt = d(MaxWCSD)/dt$
Add linear feedback to acceleration command proportional to (X_S - MaxWCSD)
If necessary, modify acceleration command to compensate for systematic accelerometer errors, e.g. due to grade
Constrain acceleration command to be >0
DONE

1. A method of providing gradual increases or decreases in the speed of a following train that is traveling behind a leading train on a rail in a train system in order to eliminate cycles of braking and accelerating during an instance when the following train is closer than a minimum required separation distance (X_{min}) to the leading train, the method comprising the steps of:

repeatedly projecting the locations and speeds of the following train and the leading train after a delay time in the future;

repeatedly estimating a train separation distance (X_s) between the following train and the leading train based on the projected locations and speeds of the trains;

repeatedly calculating the minimum required separation distance (X_{min}) between the following train and the leading train based on the projected locations and speeds of the following train and the leading train, wherein the minimum required separation distance (X_{min}) comprises a distance that ensures that cycles of braking and accelerating will not occur;

repeatedly comparing the estimated train separation distance (X_s) with the minimum required separation distance (X_{min});

calculating the maximum worst case stopping distance (MaxWCSD) based on the projected locations and speeds of the following train and the leading train and based on the worst case stopping distance (WCSD) and the locations of the station stops; and

reducing the speed and acceleration rate of the following train without braking when the train separation distance (X_s) is less than the minimum required separation distance (X_{min}) until the train separation distance (X_s) is equal to or greater than the minimum required separation distance (X_{min});

wherein the acceleration rate comprises

$$\frac{V_{lead} + A_{lead} * dt - V_{rear} * (1 + dsD/dx)}{dt + dSD/dv},$$

where V_{lead} is the speed of the leading train, A_{lead} is the acceleration of the leading train, dt is the time increment between successive commands, V_{rear} is the speed of the following train, dSD/dx is the partial derivative of the MaxWCSD with respect to the location of the following train, and dSD/dv is the partial derivative of the MaxWCSD with respect to the speed of the following train.

US 6,332,108 B1

VEHICULAR RUN CONTROLLING APPARATUS AND METHOD FOR AUTOMOTIVE VEHICLE

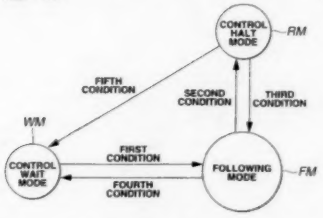
Kiyomi Hirasago, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 29, 2000, Appl. No. 605,535

Claims priority, application Japan, Jun. 30, 1999, 11-186498

Int. Cl. B60K *41/20;* **B60T** *7/12;* **G06F** *7/00*

U.S. Cl. 701—93 **11 Claims**



1. A vehicular run controlling apparatus for an automotive vehicle, comprising:

a vehicular velocity detector to detect a vehicular velocity of the vehicle;

a vehicular running environment detector to detect a running environment surrounding the vehicle;

an informing device; and

a vehicular run controller to perform a vehicular run control on the basis of the vehicular velocity detected by the vehicular velocity detector and the running environment detected by the vehicular running environment detector, the vehicular run controller having at least two control modes of a control wait mode and a vehicular run mode and including: a vehicular run control setter to set whether the vehicular run control should be started; and a mode transition instructor to instruct a mode transition from one control mode to another control mode in the vehicular run controller according to a vehicular driver's will, the vehicular run controller falling in a state of the vehicular run control when a start of the vehicular run control by means of the vehicular run controller is set through the vehicular run control setter, falling in a halt state of the vehicular run control when a release of the vehicular run control is set through the vehicular run control setter, carrying out the mode transition from one control mode to the other control mode when the mode transition from the one control mode to the other control mode is instructed through the mode transition instructor and when a predetermined condition is established during the vehicular run control irrespective of the vehicular driver's will, and informing the vehicular driver through the informing device of an occurrence of the mode transition from the one control mode to the other control mode when the mode transition from the one control mode to the other control mode occurs.

US 6,332,109 B1

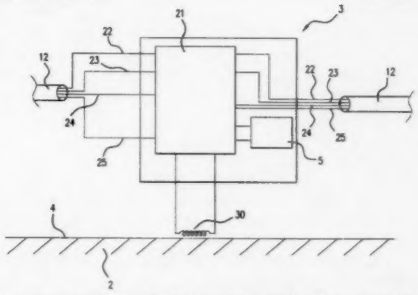
GEOLOGICAL DATA ACQUISITION SYSTEM

Stuart Nicholas Sheard, and Terry John Ritchie, both of c/o M.I.M. Exploration Pty Ltd. Level 2, Prime Business Centre 55 Little Edward Street, Spring Hill, Qld 4000, Australia

Filed Nov. 5, 1999, Appl. No. 434,501

Int. Cl. G01V *3/38*

U.S. Cl. 702—11 **29 Claims**



1. A data acquisition system for obtaining data from a geological body to which an actuating signal is applied at a predetermined location on the body, the system including:

an input sensor means for obtaining an input signal representative of a predetermined characteristic of the actuating signal;

a plurality of nodes for being located at spaced-apart locations on the body, each for simultaneously obtaining a respective first output signal from the body, the first output signal being induced by said actuating signal and being representative of a predetermined characteristic of the body at a position which is at or adjacent to the surface of the body and which corresponds to the location of the respective nodes;

first memory means disposed at each node for storing first data representative of the respective first output signal; and

a processing centre remote from the nodes for obtaining the first data from each first memory means.

US 6,332,110 B1

METHOD FOR MONITORING ADVANCED SEPARATION AND/OR ION EXCHANGE PROCESSES

Thomas D. Wolfe, Rough and Ready, Calif., assignor to Per-Lorica, Inc., Clovis, Calif.

Filed Dec. 17, 1998, Appl. No. 213,781

Int. Cl. B01D *15/00;* **B04B** *13/00*

U.S. Cl. 702—22 **29 Claims**

1. A method for remote monitoring and assessing the performance of advanced separation processes employing an electronic control system for monitoring selected parameters comprising the steps of:

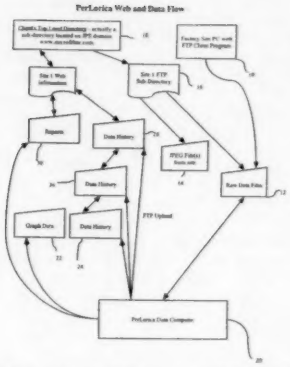
a) accessing raw operating data from said electronic control system;

b) providing a storage means on a local computer for holding said raw operating data in an electronic format;

c) coupling said local computer to an Internet server computer;

d) transmitting said stored raw data via the world wide web using transmission methods to a remotely located Internet server computer;

e) storing said raw data on said Internet server computer;



f) manipulating said raw data into an analysis result; and

g) uploading the results of said analysis result to an Internet server in a format suitable for access and visualization with a web browser program.

US 6,332,111 B1

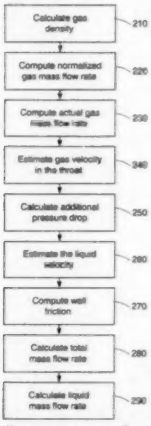
METHOD AND SYSTEM FOR MEASURING MULTIPHASE FLOW USING MULTIPLE PRESSURE DIFFERENTIALS

James R. Fincke, Idaho Falls, Id., assignor to Bechtel BWXT Idaho, LLC, Idaho Falls, Id.

Continuation-in-part of application No. 08/937,120, filed on Sep. 24, 1997, now abandoned. This application Sep. 22, 1999, Appl. No. 401,375.

Int. Cl. G01F *1/74*

U.S. Cl. 702—50 **48 Claims**



1. A method for finding a gas mass flow rate, and a total mass flow rate of a combined flow having a liquid phase and gas phase, using an extended throat venturi having a contraction and a throat, comprising the steps of:

(a) calculating a normalized gas mass flow rate based on measured pressure differences across the venturi contraction and throat;

(b) computing a gas mass flow rate in the throat using the normalized gas mass flow rate, venturi throat geometry, a gas density, and a contraction ratio of the venturi;

(c) estimating gas velocity in the throat using the gas mass flow rate;

(d) calculating a pressure drop experienced by the gas phase due to work performed by the gas phase in accelerating the liquid phase between an upstream pressure measuring point prior to the venturi and a pressure measuring point in the throat;

(e) estimating liquid velocity in the throat using the calculated pressure drop from step (d);

(f) computing a friction value between the liquid phase and venturi wall using the liquid velocity; and

(g) calculating the total mass flow rate based on measured pressure difference in the throat, the friction value and the gas velocity.

US 6,332,112 B1

METHOD AND APPARATUS FOR INSPECTING STEAM TRAPS, AND MANAGEMENT SYSTEM FOR MANAGING STEAM TRAPS

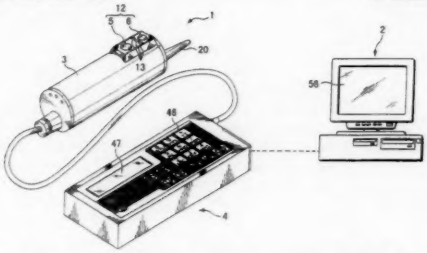
Hiroshi Shukunami, Itami, and Toshio Fujioka, Osaka, both of Japan, assignors to Miyawaki Inc., Osaka, Japan

Filed Jul. 14, 1999, Appl. No. 353,147

Claims priority, application Japan, Jul. 17, 1998, 10-203665

Int. Cl. G01N *11/00;* **G01M** *3/00*

U.S. Cl. 702—56 **15 Claims**



1. A steam trap inspecting method, comprising the steps of:

detecting a vibration level of a steam trap when its valve is closed;

converting the detected vibration level into a sealing performance deterioration value representing a deterioration level of a valve sealing performance of the steam trap under a reference steam pressure using a working steam pressure value; and

estimating the sealing performance of the steam trap based on the sealing performance deterioration value.

US 6,332,113 B1

ELECTRONIC BATTERY TESTER

Kevin I. Bertness, Batavia, Ill., assignor to Midtronics, Inc., Burr Ridge, Ill.

Continuation-in-part of application No. 08/943,033, filed on Oct. 2, 1997, Provisional application No. 60/027,890, filed on Oct. 7, 1996. This application May 3, 1999, Appl. No. 304,315.

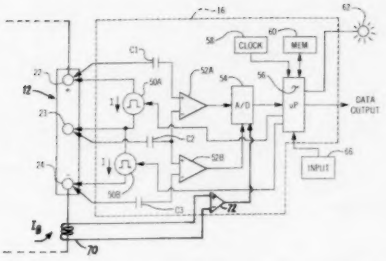
Int. Cl. G01R *31/36;* **G06F** *19/00*

U.S. Cl. 702—63 **47 Claims**

1. A device for testing a battery, comprising:

measurement circuitry adapted to apply a signal to cells of the battery and measure a response signal of the cells that make up the battery; and

a microprocessor coupled to the measurement circuitry adapted to determine a statistical parameter of a first portion of a string of cells that make up the battery as a function of the



response signal, measure a first dynamic parameter of a second portion of the string of cells that make up the battery as a function of the response signal, and provide an output based upon a comparison of the statistical parameter to the dynamic parameter.

US 6,332,114 B1

EVALUATION SYSTEM FOR DETERMINING A PERCENT A PRODUCT IS DEFECTIVE USING A NETWORK

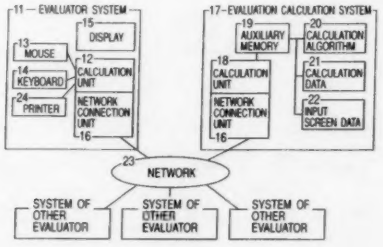
Yuzo Hiroshige, Yokohama, and Yoshiaki Ichikawa, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application No. 09/600,254, filed as application No. PCT/JP98/05687, filed on Dec. 16, 1998. This application Oct. 11, 2000, Appl. No. 685,904.

Claims priority, application Japan, Jan. 20, 1998, 10-008284

Int. Cl. G06F *17/50*

U.S. Cl. 702—81 **12 Claims**



1. A method for performing an evaluation to determine a percent a product is defective through a network, comprising the steps of:

receiving an information relating to the product to be evaluated and an information relating to parts constructing said product to be evaluated from a terminal at an evaluator side;

outputting an evaluation value through a calculation to determine a percent a product is defective based on said information relating to the product to be evaluated and said information relating to the parts constructing said product to be evaluated;

outputting plural number of different output order lists based on said evaluation value of the calculation to determine the percent the product is defective; and

transmitting said plural number of different output order lists which are linked to each other and stored in one file to the terminal at the evaluator side.

US 6,332,115 B1

VELOCITY CALCULATING DEVICE AND HOOD RAISING SYSTEM

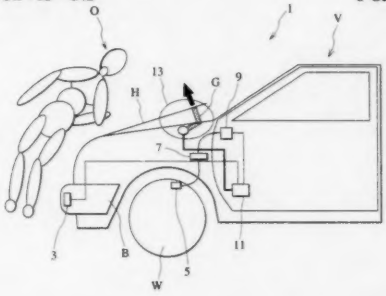
Hisashi Nobusawa, and Hideo Takai, both of Kanagawa-ken, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 29, 1998, Appl. No. 181,558

Claims priority, application Japan, Nov. 5, 1997, 9-302994

Int. Cl. G06F *17/00;* **B62D** *25/12*

U.S. Cl. 702—142 **6 Claims**



1. A hood raising apparatus for raising a hood on a front side of a vehicle, the hood raising apparatus comprising:

a collision detecting unit arranged on a front side of the vehicle, for detecting a collision of the vehicle on traveling;

a velocity calculating device which inputs a collision signal, which has been generated from the collision detecting unit, as a signal to command an output of calculation results of velocity of the vehicle, the velocity calculating device comprising:

an average velocity calculating unit which inputs velocity pulse signals representing rotating speed of wheels of the vehicle to calculate an average velocity of the vehicle at intervals of a first period as a standard;

an acceleration calculating unit for calculating an acceleration of the vehicle at intervals of a second period, on the basis of the pulse signals;

a momentary velocity calculating unit for calculating a first momentary velocity at intervals of the first period, on the basis of the average velocity and the acceleration calculated;

an inputting unit which inputs a signal to command an output of calculation results of velocity of the vehicle;

a passing-time measuring unit for measuring a passing time from beginning of the input of velocity pulse signals till the input of the signal to command the output of calculation results; and

a momentary velocity estimating unit for estimating a second momentary velocity of the vehicle at a point of time when the signal to command the output of calculation results is inputted, on the basis of the passing time measured by the passing-time measuring unit, the first momentary velocity calculated by the momentary velocity calculating unit and the acceleration calculated by the acceleration calculating unit;

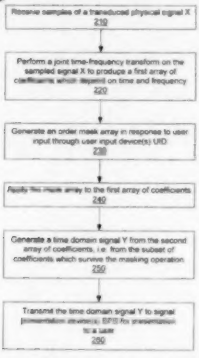
a collision judging unit which outputs an ignition signal when the second momentary velocity generated from the velocity calculating unit is within a predetermined velocity range; and

a hood raising unit for raising the hood in response to an output of the ignition signal.

US 6,332,116 B1
SYSTEM AND METHOD FOR ANALYZING SIGNALS OF ROTATING MACHINES

Shie Qian, Austin, Tex., and Hui Shao, Shanghai, China, assignors to National Instruments Corporation, Austin, Tex.

Filed Apr. 19, 2000, Appl. No. 551,924
Int. Cl. G01F *1/56*
U.S. Cl. 702—183 **47 Claims**


Receive samples of a transduced physical signal X
210
Perform a joint time-frequency transform on the sampled signal X to produce a first array of coefficients which depend on time and frequency
220
Generate an order mask array in response to user input through user input device(s) UID
230
Apply the mask array to the first array of coefficients
240
Generate a time domain signal Y from the second array of coefficients, i.e. from the subset of coefficients which survive the masking operation
250
Transmit the time domain signal Y to signal presentation device(s) SPD for presentation to a user
260

1. A method for analyzing an input signal acquired from a mechanical system containing a rotating apparatus, the method comprising:

receiving samples of the input signal, wherein the input signal is sampled in time;

performing an invertible joint time-frequency transform on the samples of the input signal to produce a first array of coefficients which depend on time and frequency;

selecting first coefficients from the first array which correspond to a first subset of one or more order components in the input signal;

generating a time domain signal from the first coefficients; and

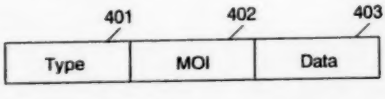
presenting the time domain signal to a user on a presentation device, wherein the time domain signal is useable in analyzing the mechanical system; and

adjusting the mechanical system in response to analysis of the time domain signal, wherein said adjusting the mechanical system comprises one or more of: 1) changing a design of the mechanical system; 2) replacing one or more components of the mechanical system; 3) predicting a failure of one or more components of the mechanical system; and 4) adding a sound-absorbent material to one or more locations of the mechanical system.

US 6,332,117 B1
GENERAL EVENT STAMPING SCHEME

Robert Francis Berry; Riaz Y. Hussain, both of Austin; Chester Charles John, Jr., Round Rock; Frank Eliot Levine, and Robert John Urquhart, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1998, Appl. No. 177,035
Int. Cl. G06F *15/00; 17/40*
U.S. Cl. 702—187 **24 Claims**



1. In a data processing system, a method comprising the steps of:

collecting events from a monitored process over a span of time;

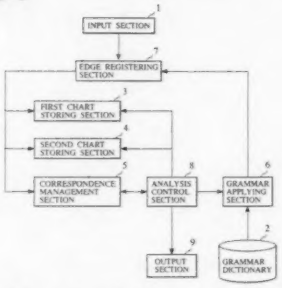
stamping each of the events with a user-selectable metric of interest; and

storing each of the events with its respective metric of interest.

US 6,332,118 B1
CHART PARSING METHOD AND SYSTEM FOR NATURAL LANGUAGE SENTENCES BASED ON DEPENDENCY GRAMMARS

Kiyoshi Yamabana, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 13, 1999, Appl. No. 373,553
Claims priority, application Japan, Aug. 13, 1998, 10-228850
Int. Cl. G06F *17/27*
U.S. Cl. 704—9 **20 Claims**



1. A natural language analyzing system for analyzing natural language, comprising a processor which processes data by executing a program in accordance with input data, a memory connected to said processor and in which the program to be executed by said processor and data necessary for execution of the program are stored, an input device connected to said processor and which inputs data to said processor, and an output device which outputs data processed by said processor,

wherein said memory contains

a dictionary storing area which stores rules of a dependency grammar of the natural language,

a chart storing area storing a first chart which retains a dependency structure as an edge in which words are connected with each other with connective dependency relation while regarding positions at intervals among the words in a word string to be analyzed as nodes, and a second chart which retains a dependency structure as an edge in which words are connected with each other with the connective dependency relation while regarding the words in the word string to be analyzed as the nodes;

a grammar applying area which stores a program for creating a dependency structure connecting an adjacent pair of edges on said first chart and a dependency structure connecting an adjacent pair of edges on said second chart, by applying the rules of the dependency grammar stored in said dictionary storing area to the adjacent pair of edges on said first chart and the adjacent pair of edges on said second charts,

an edge registering area which stores a program for storing, in said chart storing area, the dependency structure created by the program stored in said grammar applying area, as new edges to be retained in said first and second charts, and

an analysis control area which stores a program for repeating creation of the dependency structure which is performed by the program stored in said grammar applying area and storage of the new edges which is performed by the program stored in said edge registering area, until a predetermined condition is satisfied;

said input device inputs the string of words to be analyzed;

said processor analyzes the string of words which has been input from said input device, by executing the program stored in said analysis control area and thereby sequentially executing the program stored in said edge registering area

and the program stored in said grammar applying area until the predetermined condition is satisfied; and

said output device outputs, as a result of analysis of the string of words which has been input from said input device, the edges stored in said first chart when the predetermined condition has been satisfied.

US 6,332,119 B1
ADJUSTABLE CODEC WITH ADJUSTABLE PARAMETERS

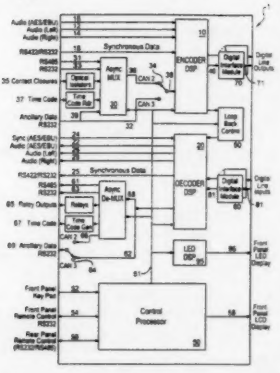
Larry W. Hinderks, Holmdel, N.J., assignor to Corporate Computer Systems, Holmdel, N.J.

Continuation of application No. 08/630,790, filed on Apr. 10, 1996, now Pat. No. 6,041,295, which is a continuation of application No. 08/420,721, filed on Apr. 10, 1995, now abandoned, which is a continuation of application No. 08/419,200, filed on Apr. 10, 1995, now abandoned. This application Mar. 20, 2000, Appl. No. 531,020.

This patent is subject to a terminal disclaimer.

Int. Cl. G10L *11/00*

U.S. Cl. 704—206 **57 Claims**



1. An adjustable CODEC for compression and decompression of signals comprising:

an input for receiving an audio signal;

a memory storage device having a plurality of audio compression schemes stored thereon for compressing said audio signal;

an encoder for forming a first compressed digital bit stream, said encoder cooperatively connected to said memory storage device;

at least one interface selectively connecting an output from said encoder to a node of a selected first one of a plurality of digital transmission facilities;

a decoder having a decompression unit having a plurality of programmed audio decompression schemes for decompressing a received compressed digital data bit stream into a decompressed signal;

an input of said decoder selectively connected by said at least one interface to said node of said selected first one of said plurality of digital transmission facilities; and

an output connected to said decoder for outputting said decompressed signal.

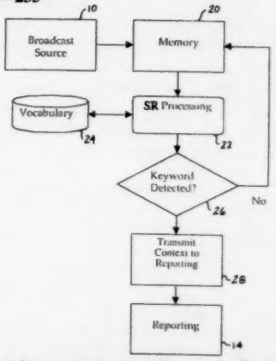
US 6,332,120 B1
BROADCAST SPEECH RECOGNITION SYSTEM FOR KEYWORD MONITORING

Robert L. Warren, Cardiff, Calif., assignor to Solana Technology Development Corporation, San Diego, Calif.

Filed Apr. 20, 1999, Appl. No. 294,865

Int. Cl. G10L *15/00;15/26*

U.S. Cl. 704—235 **36 Claims**



1. A method for monitoring broadcast audio for information of interest comprising the steps of:

providing a vocabulary of keywords of interest;

receiving said broadcast audio;

processing the received audio using a speech recognition system to detect when one of said keywords appears in the audio; and

automatically generating a written report based on the detection of said one of said keywords;

wherein said written report provides at least one of airplay verification and tracking of public relations matters relating to said keywords of interest.

US 6,332,121 B1
SPEECH SYNTHESIS METHOD

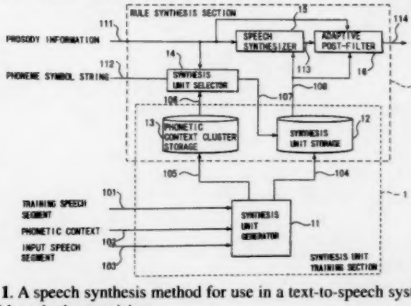
Takehiko Kagoshima, Yokohama, and Masami Akamine, Yokosuka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of application No. 08/758,772, filed on Dec. 3, 1996, now Pat. No. 6,240,384. This application Nov. 27, 2000, Appl. No. 722,047.

Claims priority, application Japan, Dec. 4, 1995, 7-315431; Mar. 12, 1996, 8-054714; Mar. 25, 1996, 8-068785; Mar. 29, 1996, 8-077393; Sep. 20, 1996, 8-250150

Int. Cl. G10L *13/00*

U.S. Cl. 704—262 **10 Claims**



1. A speech synthesis method for use in a text-to-speech system, said method comprising:

outputting a plurality of input speech segments Si and a plurality of training speech elements Ti;

generating a plurality of synthesized speech segments Gij, where i and j are positive integers, by changing at least one of a pitch

period and a time duration of each of the input speech segments Sj to be equal to at least one of a pitch period and time duration of each of the training speech segments Ti;

evaluating a distortion eij of each of the synthesized speech segments Gij based on a distance between each of the synthesized speech segments Gij and each of the training speech segments Ti;

selecting a plurality of synthesis units Dk indicating a minimum evaluation from the input speech segments Sj according to the distortion eij; and

generating a synthesis speech by selecting predetermined synthesis units from the synthesis units Dk on input text information and connecting the predetermined synthesis units to one another to generate the synthesis speech.

US 6,332,122 B1

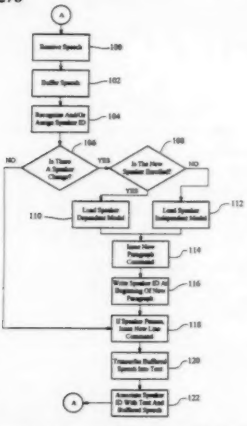
TRANSCRIPTION SYSTEM FOR MULTIPLE SPEAKERS, USING AND ESTABLISHING IDENTIFICATION

Kerry A. Ortega, Raleigh, N.C.; James R. Lewis, Delray Beach, Fla.; Ronald E. Vanbuskirk, Indiantown, Fla.; Huifang Wang, Boynton Beach, Fla., and Stephane H. Maes, Danbury, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1999, Appl. No. 337,392

Int. Cl. G10L *11/00;15/04;17/00;15/26;15/08*

U.S. Cl. 704—270 **36 Claims**



1. In a computer system having a text independent speech recognition application, a method of transcribing text from multiple speakers comprising the steps of:

receiving a speech signal from one of a plurality of speakers through a single channel;

assigning a unique speaker ID to said speaker providing said speech signal through said channel;

processing said speech signal into text using a speech recognition model;

creating a document containing said text;

associating said processed speech signal and said text in said document with said unique speaker ID assigned to said speaker; and,

monitoring said speech signal for a speaker change to a different one of said plurality of speakers.

US 6,332,123 B1

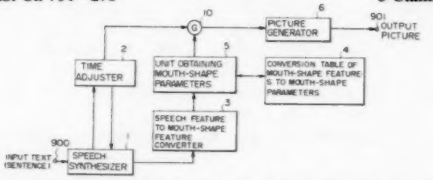
MOUTH SHAPE SYNTHESIZING

Masahide Kaneko; Atsushi Koike, both of Tokyo; Yoshinori Hatori, Kawasaki; Seiichi Yamamoto, and Norio Higuchi, both of Urawa, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of application No. 07/887,419, filed on May 19, 1992, now abandoned, which is a continuation of application No. 07/488,694, filed on Mar. 5, 1990, now abandoned. This application Jan. 19, 1994, Appl. No. 183,671. Claims priority, application Japan, Mar. 8, 1989, 1-53899

Int. Cl. G10L *11/00*

U.S. Cl. 704—276 **3 Claims**



1. A picture synthesizing method for synthesizing a moving picture of a person's face having mouth-shape variations from a train of input characters,

comprising the steps of:

developing from the train of input characters a train of phonemes, utilizing a speech synthesis technique outputting, for each phoneme, a corresponding vocal sound feature including articulation mode and its duration of each corresponding phoneme of the train of phonemes;

determining for each phoneme a mouth-shape feature corresponding to each phoneme on the basis of the corresponding vocal sound feature, said mouth-shape feature including the degree of opening of the mouth, the degree of roundness of the lips, the height of the lower jaw in a raised and a lowered position, and the degree to which the tongue is seen,

determining values of mouth-shape parameters, for each phoneme, for representing a concrete mouth-shape on the basis of the mouth-shape feature; and

controlling the values of the mouth-shape parameters, for each phoneme, for each frame of the moving picture in accordance with the duration of each phoneme, thereby synthesizing the moving picture having mouth-shape variations matched with a speech output audible in case of reading the train of input characters.

US 6,332,124 B1

METHOD AND SYSTEM FOR MANAGING MAGAZINE PORTFOLIOS

Michael Loeb, Darien, and John Nimons, Redding, both of Conn., assignors to Synapse Group, Inc., Stamford, Conn.

Filed Jul. 30, 1999, Appl. No. 364,772

Int. Cl. G06F *17/60*

U.S. Cl. 705—1 **25 Claims**

1. A method of consolidating subscriptions comprising:

receiving from one or more fulfillment houses subscription information corresponding to subscriptions;

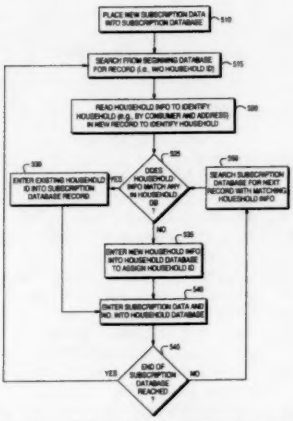
organizing the subscription information by consumer household;

receiving consumer information from a consumer of a household;

matching the consumer information with subscription information associated with the consumer's household;

presenting to the consumer subscription information matching the received consumer information;

receiving from the consumer an indication of selected subscriptions; and

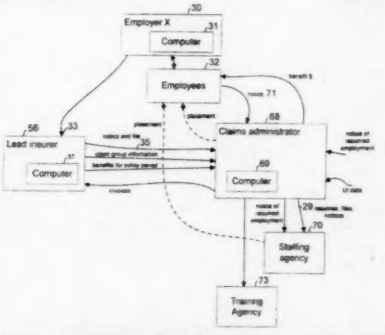

PLACE NEW SUBSCRIPTION DATA INTO SUBSCRIPTION DATABASE
510
SEARCH FROM BEGINNING DATABASE FOR RECORD (I.E. WHO HOUSEHOLD ID)
515
READ HOUSEHOLD INFO TO IDENTIFY HOUSEHOLD (E.G. BY CONSUMER AND ADDRESS) IN NEW RECORD TO IDENTIFY HOUSEHOLD
520
525
DOES HOUSEHOLD INFO MATCH ANY IN HOUSEHOLD DB ?
YES
530
ENTER EXISTING HOUSEHOLD ID INTO SUBSCRIPTION DATABASE RECORD
550
SEARCH SUBSCRIPTION DATABASE FOR NEXT RECORD WITH MATCHING HOUSEHOLD INFO
NO
535
ENTER NEW HOUSEHOLD INFO INTO HOUSEHOLD DATABASE TO ASSIGN HOUSEHOLD ID
540
ENTER SUBSCRIPTION DATA AND NO. INTO HOUSEHOLD DATABASE
545
END OF SUBSCRIPTION DATABASE REACHED ?
YES
NO

linking a number of the selected subscriptions to the received consumer information.

US 6,332,125 B1
PROVIDING TERMINATION BENEFITS FOR EMPLOYEES

Brock W. Callen, and Hope C. Callen, both of Chilmark, Mass., assignors to Spincor LLC, Chilmark, Mass.

Filed Dec. 18, 1998, Appl. No. 215,950
Int. Cl. G06F *17/60*
U.S. Cl. 705—4 **64 Claims**



1. A computer-based method for use in connection with an insurance product under which an insurer will provide termination benefits to employees of an employer who are non-voluntarily terminated from employment by the employer, the method comprising:

storing historical information about rates of termination of employees of the employer who are non-voluntarily terminated during a predetermined historical period, and historical information indicative of periods of time during which employees who are non-voluntarily terminated are expected to remain unemployed,

based on the stored historical information, estimating an amount of money that will be required to pay termination benefits under the insurance product to employees who are non-voluntarily terminated, assuming a continuation of the historical termination rates,

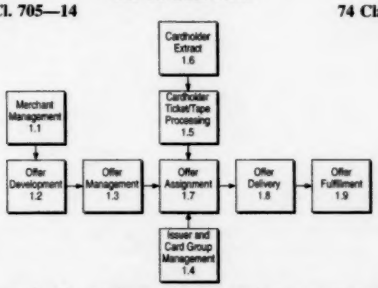
determining a price for the insurance product that is smaller than the estimated amount of money so that the employer's cost for termination benefits will be smaller under the insurance product than without the insurance product, and

making the price available to a party for use in connection with offering the insurance product to the employer.

US 6,332,126 B1
SYSTEM AND METHOD FOR A TARGETED PAYMENT SYSTEM DISCOUNT PROGRAM

Roger L. Peirce, Los Altos; Bruce C. Rhoads, Foster City, both of Calif.; John Duncan, Malverne, N.Y.; Scott J. Loftesness, Menlo Park, Calif.; Kurt W. Johnson, Tempe, Ariz.; Mary K. Dobbs, San Francisco, Calif., and Dan Mayes, Hanover Park, Ill., assignors to First Data Corporation, Palo Alto, Calif.

Filed Aug. 1, 1996, Appl. No. 690,765
Int. Cl. G06F *17/60*
U.S. Cl. 705—14 **74 Claims**



1. A method for implementing a targeted payment system discount program on a general-purpose digital computer at a processing institution having data storage memory comprising the steps of:

(a) receiving and storing consumer information concerning participating consumers supplied by one or more payment systems institutions each of which supplies payment means to a subset of the participating consumers;

(b) receiving and storing information on merchant discount offers from at least one merchant or acquirer which includes discount information, transaction requirements, and consumer target criteria;

(c) identifying qualifying consumers for a merchant discount offer by computer matching the consumer target criteria for the merchant discount offer with the consumer information concerning participating consumers;

(d) comparing consumer transactions of qualifying consumers with the transaction requirements of the merchant discount offer; and

(e) returning a calculated discount to qualifying consumers who meet the transaction requirements of the merchant discount offer via a payment systems institution.

US 6,332,127 B1
SYSTEMS, METHODS AND COMPUTER PROGRAM PRODUCTS FOR PROVIDING TIME AND LOCATION SPECIFIC ADVERTISING VIA THE INTERNET

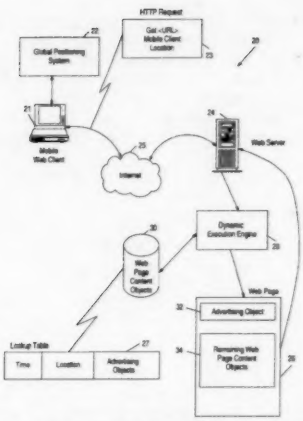
Daniel Quinto Bandera, Austin, Tex.; Mark F. Bregman, Ridgefield, Conn.; Ajei S. Gopal, Riverdale, N.Y., and Sandeep Singhal, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1999, Appl. No. 238,474
Int. Cl. G06F *17/60*
U.S. Cl. 705—14 **39 Claims**

1. A method of selecting an object to be displayed within a Web page requested by a user from a Web server, wherein the user makes the Web page request via a mobile Web client in communication with the Web server, the method comprising the following steps:

obtaining user location information in response to a user request for a Web page to be displayed via a mobile Web client, wherein the user location information is obtained by the mobile Web client;

transmitting the user request for the Web page to the Web server, wherein the Web page request contains the user location information;



receiving the user request for the Web page at the Web server, along with the obtained user location information that is contained within the Web page request;

selecting an object to include within the requested Web page based on the obtained user location information contained within the Web page request;

generating the requested Web page, wherein the generated Web page includes the selected object; and

serving the generated Web page to the mobile Web client.

US 6,332,128 B1

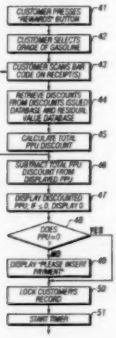
SYSTEM AND METHOD OF PROVIDING MULTIPLE LEVEL DISCOUNTS ON CROSS-MARKETED PRODUCTS AND DISCOUNTING A PRICE-PER-UNIT-VOLUME OF GASOLINE

G. Randy Nicholson, Abilene, Tex., assignor to AutoGas Systems, Inc., Abilene, Tex.

Provisional application No. 60/093,813, filed on Jul. 23, 1998. This application Feb. 19, 1999, Appl. No. 253,275.

Int. Cl. G06F *17/60*

U.S. Cl. 705—14 **27 Claims**


CUSTOMER PRESSES "REWARDS" BUTTON
CUSTOMER SELECTS GRADE OF GASOLINE
CUSTOMER SCANS BAR CODE ON RECEIPT(S)
RETRIEVE DISCOUNTS FROM DISCOUNTS CODES DATABASE, AND RESIDUAL VALUE DATABASE
CALCULATE TOTAL PPU DISCOUNT
SUBTRACT TOTAL PPU DISCOUNT FROM DISPLAYED PPU
DISPLAY DISCOUNTED PPU, IF > 0, DISPLAY 0
DOES PPU=0
YES
NO
AND
DISPLAY "PLEASE INSERT PAYMENT"
LOCK CUSTOMER'S RECORD
START TIMER

1. A method of providing multiple level discounts on a price-per-unit (PPU) of a consumable good sold in multiple units to a customer who purchases a plurality of cross-marketed products, said method comprising the steps of:

awarding a first discount on the PPU of the consumable good to the customer in response to a purchase by the customer of a first cross-marketed product;

awarding a second discount on the PPU of the consumable good to the customer in response to a purchase by the customer of a second cross-marketed product;

adding the first discount to the second discount to determine a total discount on the PPU of the consumable good; and

awarding the total discount to the customer.

US 6,332,129 B1

METHOD AND SYSTEM FOR UTILIZING A PSYCHOGRAPHIC QUESTIONNAIRE IN A BUYER-DRIVEN COMMERCE SYSTEM

Jay S. Walker, Ridgefield; Daniel E. Tedesco, New Canaan, and James A. Jorasch, Stamford, all of Conn., assignors to priceline.com Incorporated, Norwalk, Conn.

Continuation-in-part of application No. 08/943,483, filed on Oct. 3, 1997, which is a continuation-in-part of application No. 08/923,683, filed on Sep. 4, 1997, which is a continuation-in-part of application No. 08/889,319, filed on Jul. 8, 1997, which is a continuation-in-part of application No. 08/707,660, filed on Sep. 4, 1996, now Pat. No. 5,794,207. This application Dec. 4, 1998, Appl. No. 205,663.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *17/00*

U.S. Cl. 705—26 **46 Claims**

1. A method for processing a sale of an item, comprising the steps of:

obtaining a first conditional purchase offer for said item from a customer, said first conditional purchase offer containing at least a description of said item, a payment identifier for specifying a manner in which funds may be paid and a price;

providing a questionnaire having a first question and a first and a second answer to said customer;

receiving one of said first and second answers from said customer;

performing a predetermined action based upon said received answer; and

generating a second conditional purchase offer including at least said item based on said predetermined action.

US 6,332,130 B1

SYSTEM AND PROCESS FOR INTER-DOMAIN PLANNING ANALYSIS AND OPTIMIZATION USING MODEL AGENTS AS PARTIAL REPLICAS OF REMOTE DOMAINS

Ranjit N. Notani, Irving, and John E. Mayer, Dallas, both of Tex., assignors to i2 Technologies US, Inc., Dallas, Tex.

Continuation-in-part of application No. 08/917,151, filed on Aug. 25, 1997, now Pat. No. 5,995,945. This application Oct. 4, 1999, Appl. No. 411,069.

This patent is subject to a terminal disclaimer.

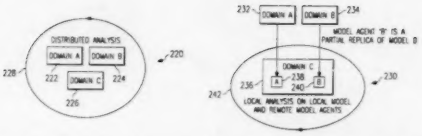
Int. Cl. G06F *17/60*

U.S. Cl. 705—28 **19 Claims**

1. A computer implemented system for inter-domain analysis related to a supply chain activity, comprising:

a first domain engine associated with a first supply chain entity;

the first domain engine having a first domain model representing a supply chain activity of the first supply chain entity;



the first domain engine operable to receive a second model agent representing a partial replica of a second domain model, the second domain model representing a supply chain activity of a second supply chain entity; and

the first domain engine operable to expand the first domain model using the second model agent to accomplish inter-domain analysis related to the supply chain activity at the first domain engine.

US 6,332,131 B1

METHOD AND SYSTEM FOR AUTOMATICALLY HARMONIZING ACCESS TO A SOFTWARE APPLICATION PROGRAM VIA DIFFERENT ACCESS DEVICES

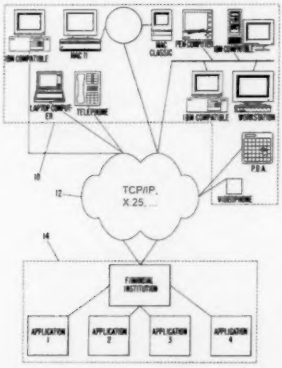
Michael L. Grandcolas, Santa Monica; Wendell W. Anthony, Brentwood; Patrick Law, Los Angeles; Leslie Moss, Los Angeles; Teresa A. Petach, Los Angeles, and Peter Tompkins, Malibu, all of Calif., assignors to Transaction Technology, Inc., Los Angeles, Calif.

Continuation of application No. 08/741,121, filed on Oct. 30, 1996, now Pat. No. 5,867,153. This application Aug. 19, 1998, Appl. No. 136,362.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *17/60*; **H04N** *7/01*

U.S. Cl. 705—35 **15 Claims**



1. A method for facilitating communication between a user using a device with a display and an application program which the user desires to access through the device comprising:

identifying the desired program and the type of device being used, wherein identifying the type of device being used further includes identifying the type of software being used by the device;

accessing the desired application program, identifying information to be displayed to the user as part of the program and translating the information to be displayed into a format which is compatible with the display of the device;

translating input information inputted by the user in response to the displayed information into a format which is compatible with the application program and forwarding said translated input information to said application program; and

translating a response to the input information returned by said program into a format which is compatible with the display of said device and forwarding said translated response to said device.

US 6,332,132 B1

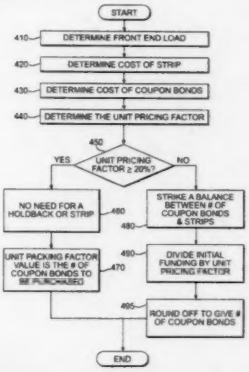
AUTOMATED METHODS AND APPARATUS FOR PROGRAMMED PERIODIC REPLENISHMENT OF PRINCIPAL WITH ANNUAL ADJUSTMENT TO FUTURE INTEREST RATES

Richard G. Halpern, 44 Fernhill Rd., Springfield, N.J. 07081

Provisional application No. 60/051,130, filed on Jun. 27, 1997. This application Jun. 26, 1998, Appl. No. 105,070.

Int. Cl. G06F *17/60*

U.S. Cl. 705—36 **3 Claims**



1. A method of automatically managing an initial funding amount to achieve a future rate of return that will be consistent with future economic conditions without diminishing principal, comprising the steps, performed by a data processor, of:

receiving input values for the initial funding amount, a cost of a primary term investment vehicle, a cost of a secondary term investment vehicle and any front end load for the primary and secondary term investment vehicles;

creating an initial investment structure by splitting the initial funding amount into a predetermined number of portions, spreading the portions over a predetermined number of initial investment terms, and dividing each portion between the primary and secondary term investment vehicles such that for each term, the sum of the values for the primary and secondary term investment vehicles at the end of the corresponding term equals the portion for that term, the step of creating the initial investment structure including the substeps of

calculating the amount of the portions needed to cover any front end load,

determining a factor to divide each portion, less the calculated front end load, of the initial funding amount between the primary and secondary investment vehicles, further including the substep of

setting the factor at a unit pricing factor as

$$\left(\left(\frac{(Cx-1000)}{(1000-Sx)}\times Sx\right)+Cx\right)$$

where Cx is the front end cost of the primary term investment vehicle over an initial term, and Sx is the cost of the secondary term investment vehicle over an initial term; and

creating communications to implement the initial investment structure; and maintaining an ongoing investment structure for an additional term as each portion of the initial funding amount matures at the end of the corresponding investment term by determining a reinvestment of gross proceeds for

an additional investment term, the step of maintaining the investment structure including the substeps of

receiving updated input values for the cost of the primary investment vehicle and the cost of the secondary investment vehicle,

matching the secondary investment vehicle to the primary investment vehicle to maintain a consistent level of reinvestment, and

scheduling the automatic purchasing of primary and secondary term investment vehicles as determined after matching.

US 6,332,133 B1

PERSONAL ELECTRONIC SETTLEMENT SYSTEM, ITS TERMINAL, AND MANAGEMENT APPARATUS

Hisashi Takayama, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

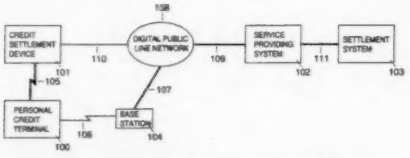
PCT No. PCT/JP97/04161, § 371 Date Sep. 8, 1998, § 102(e) Date Sep. 8, 1998, PCT Pub. No. WO98/21677, PCT Pub. Date May 22, 1998

PCT Filed Nov. 14, 1997, Appl. No. 101,356

Claims priority, application Japan, Nov. 14, 1996, 8-316897; Apr. 22, 1997, 9-117681

Int. Cl. G06F *17/60*

U.S. Cl. 705—39 **129 Claims**



1. A personal electronic settlement system comprising:

payment means including a plurality of systems of communication means;

charging means including a plurality of systems of communication means; and

settlement means including a plurality of systems of communication means,

wherein communication among said payment means, said charging means and said settlement means is performed by employing different systems of communication means.

US 6,332,134 B1

FINANCIAL TRANSACTION SYSTEM

Chuck Foster, P.O. Box 3568, Yountville, Calif. 94599

Provisional application No. 60/174,299, filed on Jan. 3, 2000, Provisional application No. 60/162,651, filed on Nov. 1, 1999. This application Mar. 9, 2000, Appl. No. 522,333.

Int. Cl. G06F *17/00*

U.S. Cl. 705—39 **39 Claims**

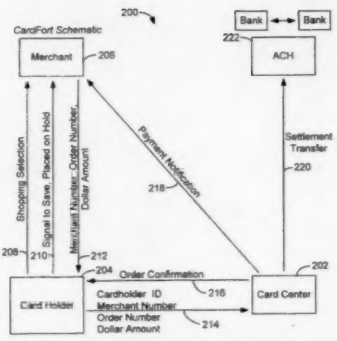
1. A method of performing a financial transaction allowing a cardholder to make a purchase from a merchant using credit established at a financial institution, the method comprising:

transmitting a merchant offer from the merchant to the cardholder, wherein the merchant offer includes merchant information about the merchant and the purchase;

transmitting at least a portion of the merchant information and cardholder information from the cardholder to the financial institution, wherein the financial institution uses the merchant information and the cardholder information to determine whether the merchant offer and/or the purchase are authorized;

transmitting payment for the purchase from the financial institution to a merchant account; and

sending a purchase request from the financial institution to the merchant, the purchase request including at least a portion of



the merchant offer and a payment notification, wherein the portion of the merchant offer is used to match up the purchase request with the purchase, and the payment notification is used to indicate that payment for the purchase has been made and that the merchant offer has been accepted, and wherein the purchase request does not contain any information relating to the identity of the cardholder.

US 6,332,135 B1

SYSTEM AND METHOD FOR ORDERING SAMPLE QUANTITIES OVER A NETWORK

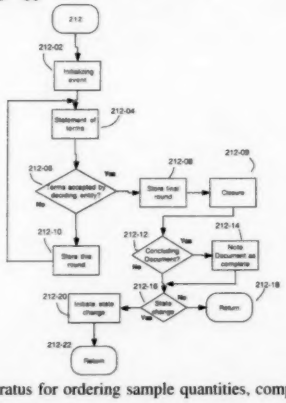
Jeffrey Conklin, Boston; David Foucher, Somerville, and Daniel Foucher, Bedford, all of Mass., assignors to TradeAccess, Inc., Boston, Mass.

Filed Nov. 16, 1998, Appl. No. 192,848

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *17/60*

U.S. Cl. 705—80 **4 Claims**



1. A apparatus for ordering sample quantities, comprising:

a network;

a multivariate negotiations system including a storage space, sample quantity software, and negotiations software, such negotiations software including an automated negotiations engine for analyzing terms, the analysis of terms comprising understanding the purpose of the terms, formatting the terms according to the purpose, and placing them into user supplied context for use by a buyer and a seller, the multivariate negotiations system being connected to the network and responsive to terminals communicating along a communications path over the network;

a first storage area in the storage space for storing a seller's sample quantity ordering terms;

a seller terminal for use by a seller connected to the network, the seller terminal including software for sending and receiving

terms along a communications path over the network which flows through the multivariate negotiations system;

a buyer terminal for use by a buyer connected to the network, the buyer terminal including software for sending and receiving terms along a communications path over the network which flows through the multivariate negotiations system, during iterative processing, the sample quantity software selecting any sample quantity ordering terms offered by the seller terminal, sending the sample quantity ordering terms to the buyer terminal upon request at any time during negotiations, and processing payment between buyer and seller therefor, the automated negotiations engine recognizing the users at the seller terminal and the buyer terminal as negotiators and recognizing one of the users as a deciding entity, such automated negotiations engine further recognizing any changes in the terms and storing in the storage space the terms each terminal proposes, and recognizing the terminal to which proposed terms are being sent as the indicated terminal, sending terms to the indicated terminal, the automated negotiations engine indicating any changes in the terms until a set of terms is acted upon in a final manner by the deciding entity.

US 6,332,136 B1

FUZZY FILTERING METHOD AND ASSOCIATED FUZZY FILTER

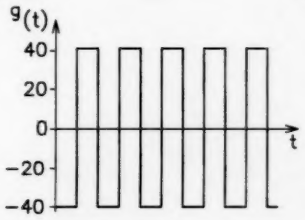
Maddalena Di Giura, Monza; Andrea Pagni; Rinaldo Poluzzi, both of Milan, and Gianguido Rizzotto, Civate, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Dec. 9, 1997, Appl. No. 987,357

Claims priority, application European Pat. Off., Dec. 11, 1996, 96830619

Int. Cl. G06N *7/02*

U.S. Cl. 706—1 **24 Claims**



1. A method of fuzzy filtering of a noise signal comprising a plurality of signal samples, the method comprising the steps of:

a) defining a current signal sample from among said plurality of signal samples;

b) calculating a plurality of difference samples as the difference in absolute value between said current signal sample and each sample of said plurality of signal samples;

c) defining distance values between said current signal sample and each sample of said plurality of signal samples;

d) determining weight parameters on the basis of said difference samples and said distance values by means of fuzzy logic; and

e) weighing said signal samples with said weight parameters so as to obtain a reconstructed current signal sample;

f) calculating a noise sample as the difference between said reconstructed current signal sample and said current signal sample;

repeating steps (a)–(f) to obtain a plurality of reconstructed current signal samples and a plurality of noise samples;

determining a noise maximum variation value on the basis of a maximum value and a minimum value of said noise samples;

determining a signal maximum variation value on the basis of a maximum value and a minimum value of said signal samples;

determining at least two first classes of membership for said plurality of difference samples, said first classes of membership being defined by functions with sections having as limits said noise and signal maximum variation values;

associating with each difference sample a respective difference level of truth in each of said first classes of membership;

determining at least two second classes of membership for said distance values;

associating with each distance value a respective distance level of truth in each of said second classes of membership;

applying fuzzy rules to associate said difference and distance levels of truth with weight values and with respective third classes of membership; and

determining said weight parameters as a function of said weight values and with pre-determined parameters of said third classes of membership.

US 6,332,137 B1

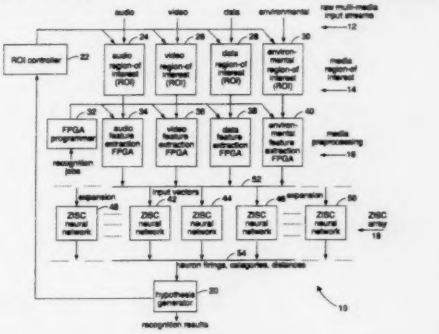
PARALLEL ASSOCIATIVE LEARNING MEMORY FOR A STANDALONE HARDWIRED RECOGNITION SYSTEM

Toshikazu Hori, 10134 Parkwood Drove, Cupertino, Calif. 95014; Guy Paillet, 119 Mariner Green, Corte Madera, Calif. 94925, and Jeffrey M. Woo, 896 Kearny Ter., Sunnyvale, Calif. 94086

Filed Feb. 11, 1999, Appl. No. 249,246

Int. Cl. G06N *3/02*

U.S. Cl. 706—15 **11 Claims**



1. A recognition system, comprising:

a dynamically reconfigurable logic device similar to a field programmable gate array and programmed to do a feature extraction process from a media input stream; and

a zero instruction set computer (ZISC) device that includes a plurality of neural networks that are connected to simultaneously receive a preprocessed feature extraction data from the dynamically reconfigurable logic device;

wherein, a variety of recognition jobs can each be processed by the combination of the logic device and the ZISC by changing said feature extraction process via a dynamic reconfiguration and substantially no hardware changes.

US 6,332,138 B1

TEXT INFLUENCED MOLECULAR INDEXING SYSTEM AND COMPUTER-IMPLEMENTED AND/OR COMPUTER-ASSISTED METHOD FOR SAME

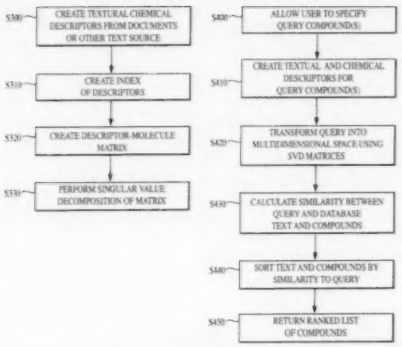
Richard D. Hull, Orlando, Fla.; Eugene M. Fluder, Jr., Hamilton Square, and Suresh B. Singh, Kendall Park, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Provisional application No. 60/145,210, filed on Jul. 23, 1999. This application Jul. 24, 2000, Appl. No. 624,209.

Int. Cl. G06F *17/30;* **G06N** *7/00*

U.S. Cl. 707—5 **58 Claims**

1. A method of calculating similarity or substantial similarity between a first chemical descriptor and at least one other chemical



descriptor in a matrix representing a plurality of chemical and textual descriptors, comprising the steps of:

(a) creating at least one chemical descriptor and at least one textual descriptor for each compound in a collection of compounds;

(b) preparing a descriptor matrix X, wherein the descriptor matrix comprises:

a plurality of columns, each column representing a text source containing textual and chemical descriptions, and;

a plurality of rows, each row comprising a descriptor associated

with each respective text source,

wherein the entries in the descriptor matrix indicate the number of times a descriptor occurs in each respective text source;

(c) performing a singular value decomposition (SVD) of the descriptor matrix to produce resultant matrices;

(d) using at least one of the resultant matrices to compute the similarity between the first chemical descriptor d_i and the at least one other chemical descriptor d_j; and

(e) outputting at least a subset of the at least one other chemical descriptor ranked in order of similarity to the first chemical descriptor.

US 6,332,139 B1

INFORMATION COMMUNICATION SYSTEM

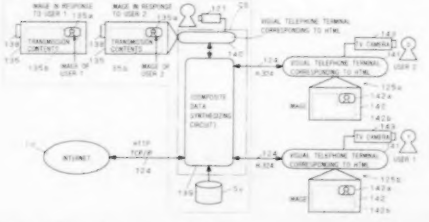
Toshikazu Kaneko, and Masakazu Nishimoto, both of Osaka, Japan, assignors to Mega Chips Corporation, Osaka, Japan

Filed Nov. 8, 1999, Appl. No. 435,916

Claims priority, application Japan, Nov. 9, 1998, 10-317704; Jun. 30, 1999, 11-185762; Aug. 11, 1999, 11-227996

Int. Cl. G06F *17/30*

U.S. Cl. 707—6 **46 Claims**



1. An information communication system for making information interchange between a plurality of first stations having communication functions and a prescribed second station having a communication function through a communication path,

having an information base including various types of information arranged on at least one of said second station, said first stations and a third station other than said first and second stations, wherein

said second station comprises:

an information recognition part recognizing the semantic contents of information transmitted from each said first station on the basis of information in said information base,

a response determination part determining the optimum response on the basis of the result of said recognition,

an optimum information preparation part preparing transmission information with information in said information base on the basis of said determination and transmitting said transmission information to each said first station,

wherein said second station further comprises an information transmission part interposed between said optimum information preparation part and said communication path for processing information output from said optimum information preparation part, and

said optimum information preparation part comprises a compression control part controlling compressibility in a compression processing part so that a signal quantity of information transmitted to said communication path is within a target range.

US 6,332,140 B1

SYSTEM AND METHOD FOR MANAGING DATA RETRIEVAL BANDWIDTH

Scott A. Rhine, Frisco, Tex., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of application No. 09/201,574, filed on Nov. 30, 1998, now Pat. No. 6,289,383. This application Nov. 8, 2000, Appl. No. 708,398.

Int. Cl. G06F *17/30*

U.S. Cl. 707—9 **6 Claims**

TRANSFER REQUESTS	TOTAL NUMBER REQUESTS	TIME PERIODS								
		0	1	2	3	4	5	6	7	8
RESEARCH	2		1	1						
ACCOUNTING	3	1			2					
REGISTRATION	5					3		2		
DEAN	5						2		3	
LAW SCHOOL	2		1							1

1. A storage retrieval system comprising

means for assigning to selected users a percentage availability of the data storage medium; and

means for determining a data retrieval start time for each data retrieval request from a user based upon the assigned availability percentage for the requesting user;

whereby the means for determining is operative to delay selected data retrieval requests to achieve the assigned availability percentage.

US 6,332,141 B2

APPARATUS AND METHOD OF IMPLEMENTING FAST INTERNET REAL-TIME SEARCH TECHNOLOGY (FIRST)

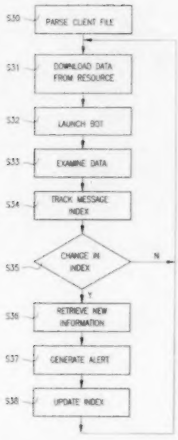
Carlos M. Gonzalez, Menlo Park, and James J. Cerna, Jr., Redwood Shores, both of Calif., assignors to NetCurrents, Inc., Beverly Hills, Calif.

Division of application No. 09/726,537, filed on Dec. 1, 2000, which is a division of application No. 09/409,256, filed on Sep. 30, 1999, now Pat. No. 6,260,041. This application Jun. 8, 2001, Appl. No. 875,953.

Int. Cl. G06F *7/00;17/30*

U.S. Cl. 707—10 **4 Claims**

1. An article of manufacture comprising a machine-readable storage medium having stored therein indicia of a plurality of machine-executable control program steps, the control program comprising the steps of:



(a) inputting a list of monitored sites and identified terms, wherein data related to such terms may appear in the monitored sites;

(b) retrieving data from one of the monitored sites;

(c) examining the data to return any portion of the data related to the identified terms;

(d) using a tracking index to detect a real-time change in the data on the monitored site retrieved in step (b);

(e) retrieving the real-time change in the data on the monitored site based on the tracking index;

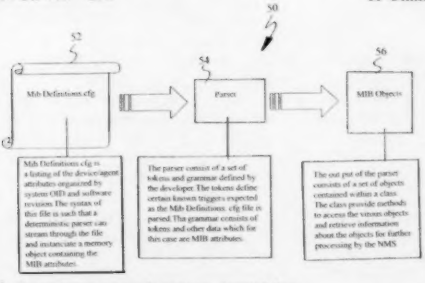
(f) generating an information alert to inform an intended recipient of the real-time change in data on the monitored site retrieved in step (b); and

(g) repeating steps (b) through (f) for each monitored site listed in step (a).

US 6,332,142 B1
MANAGEMENT INFORMATION BASE ATTRIBUTE DISCRIMINATOR

Michael Robert LeBlanc, Shirley, Mass., assignor to 3Com Corporation, Santa Clara, Calif.

Filed Apr. 26, 1999, Appl. No. 299,710
Int. Cl. G06F *17/30*
U.S. Cl. 707—100 **11 Claims**


S0
S2
S4
S6
Mib Definitions.cfg
Parser
MIB Objects
Mib Definitions.cfg is a listing of the device/agent attributes organized by system OID and software revision. The syntax of this file is such that a deterministic parser can stream through the file and instanciate a memory object containing the MIB attributes.
The parser consist of a set of tokens and grammar defined by the developer. The tokens define certain known triggers expected in the Mib Definitions .cfg file is parsed. The grammar consists of tokens and other data which for this case are MIB attributes.
The out put of the parser consists of a set of objects contained within a class. The class provide methods to access the vitous objects and retrieve information about the objects for further processing by the NMS

1. A computer network system, comprising:

network devices with agents comprised of software running on an embedded device microprocessor, the parameters that an agent can control being described in a management information base (MIB), the network devices having a system object identifier (OID);

network management station (NMS) software monitoring and configuring the network devices; and

a management information base (MIB) attribute discriminator for organizing MIB attributes, the discriminator including

a MIB definition listing comprising a listing of device agent attributes organized by system OID,

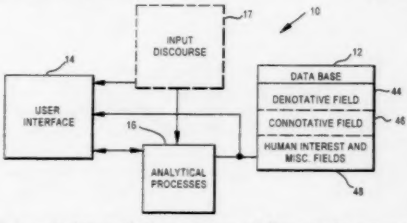
a parser for parsing the MIB definitions, said parser being implemented using the Java programming language and is stored as a package within a source code control system wherein the package utilizes the SUN "JJ" language syntax to describe a grammar and the package uses the SUN Java Compiler Compiler (JavaCC) kit to generate a Java parsing source used to parse the definition listing, and

a MIB class stored in memory by the parser, the parser generating a set of MIB objects contained within the MIB class.

US 6,332,143 B1
SYSTEM FOR CONNOTATIVE ANALYSIS OF DISCOURSE

Wayne O. Chase, Vancouver, Canada, assignor to Roedy Black Publishing Inc., Vancouver, Canada

Filed Aug. 11, 1999, Appl. No. 372,737
Int. Cl. G06F *17/30*
U.S. Cl. 707—100 **47 Claims**



1. A method for analyzing a passage of discourse for connotative information, comprising the steps of:

identifying terms in the discourse which correspond to an entry in a database of terms, the database having a plurality of records, each record corresponding to a term of the data base and including:

a first field identifying the term for the corresponding record;

a second field for identifying a denotative context for the term in the first field;

a plurality of connotative fields, each one of the plurality of connotative fields storing a code corresponding to one selection of a plurality of predefined connotations, the plurality of predefined connotations comprising an indicator of no connotative association and a plurality of sets of emotional descriptors, each one set of the plurality of sets corresponding to a mutually exclusive one emotional category of a plurality of emotional categories;

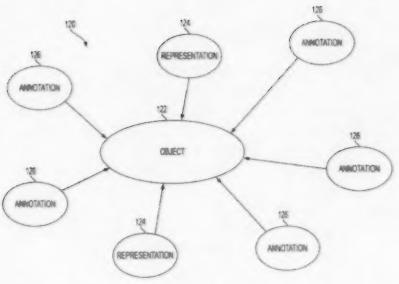
the method further comprising the step of accumulating a respective tally for each one of a plurality of predefined connotations that is associated with the terms identified in the passage.

US 6,332,144 B1
TECHNIQUE FOR ANNOTATING MEDIA

Arjen P. deVries, SB Enschede, Netherlands; Michael Sokolov, Newton, Mass.; David E. Kovalcin, Jamesburg, N.J., and Brian Eberman, Newton, Mass., assignors to AltaVista Company, Palo Alto, Calif.

Continuation of application No. 09/037,957, filed on Mar. 11, 1998. This application Dec. 3, 1998, Appl. No. 204,284.
Int. Cl. G06F *17/00*
U.S. Cl. 707—102 **24 Claims**

1. A method for annotating media, comprising the steps of:



identifying one or more particular times within a period defined by a start time and an end time of a media stream at which content within the media stream corresponds to an annotation value;

associating the annotation value with the identified one or more particular times; and

identifying a probability representing a measure of confidence in an accuracy of the annotation value corresponding to the identified one or more particular times.

US 6,332,145 B1

METHOD FOR CREATING BROWSING DATA OF AN INFORMATION SEARCHING APPARATUS AND METHOD FOR SEARCHING INFORMATION

Kenji Kawasaki, Yokohama; Tetsuo Tanaka, Sagamihara; Yoshiaki Morimoto; Kunihisa Nitta, both of Yokohama, and Kimio Tanaka, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

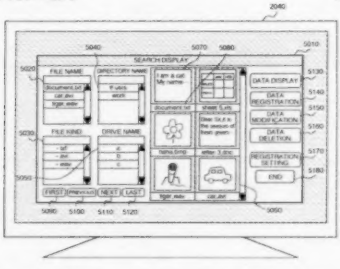
Division of application No. 08/592,033, filed on Jan. 26, 1996, now Pat. No. 6,009,438. This application Sep. 13, 1999, Appl. No. 394,046.

Claims priority, application Japan, Jan. 31, 1995, 7-013967

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *17/30*

U.S. Cl. 707—104 **6 Claims**



1. A browsing data creation system of an information searching apparatus comprising:

data storage means for storing data to be searched for;

input means for inputting an instruction to said information searching apparatus;

browsing data creation means for creating browsing data from said data stored in the data storage means; and

output means for outputting said browsing data;

wherein said apparatus has a data storage means for storing the browsing data and when the browsing data can be searched by a page, an upper limit of a number of pages of the browsing data is determined by an available capacity of said data storage means which can be allocated for storing said browsing data.

US 6,332,146 B1

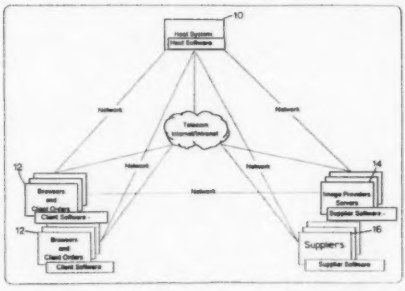
METHOD AND APPARATUS FOR STORING AND PRINTING DIGITAL IMAGES

John H. Jebens, Tierra Verde, Fla.; Jeffrey Scott James, Bettendorf, Iowa, and Lowell D. Carlson, Moline, Ill., assignors to Marshall, O'Toole, Gerstein, Murray & Borun, Chicago, Ill.

Continuation of application No. 08/908,046, filed on Aug. 11, 1997. This application Jul. 19, 2000, Appl. No. 619,188.

Int. Cl. G06F *17/30*

U.S. Cl. 707—104 **25 Claims**



1. A method for printing digital images, the method comprising the steps of:

uploading a first high resolution digital image from a first image provider to an electronic storage facility;

receiving and storing the first high resolution digital image at the electronic storage facility;

permitting the first image provider to identify users who can access the first high resolution digital image stored at the electronic storage facility;

receiving first login information from a first user, the first login information including a first user identification name and a first password;

determining if the first login information is associated with a user identified by the first image provider;

generating a low resolution copy of the first high resolution digital image;

if the first login information is associated with a user identified by the first image provider:

(a) transmitting the low resolution copy of the first high resolution digital image to the first user via the Internet;

(b) detecting a selection made by the first user, the selection made by the first user identifying the low resolution copy of the first high resolution digital image; and

(c) printing the first high resolution digital image in response to detecting the selection made by the first user;

uploading a second high resolution digital image from a second image provider to the electronic storage facility;

receiving and storing the second high resolution digital image at the electronic storage facility;

permitting the second image provider to identify users who can access the second high resolution digital image stored at the electronic storage facility;

receiving second login information from a second user the second login information including a second user identification name and a second password;

determining if the second login information is associated with a user identified by the second image provider;

generating a low resolution copy of the second high resolution digital image;

if the second login information is associated with a user identified by the second image provider:

(a) transmitting the low resolution copy of the second high resolution digital image to the second user via the Internet if the second login information is valid;

(b) detecting a selection made by the second user, the selection made by the second user identifying the low resolution copy of the second high resolution digital image; and

(c) printing the second high resolution digital image in response to detecting the selection made by the second user;

maintaining transparency of the first high resolution digital image to the second user; and

maintaining transparency of the second high resolution digital image to the first user.

US 6,332,147 B1

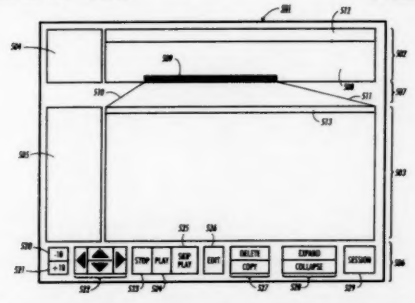
COMPUTER CONTROLLED DISPLAY SYSTEM USING A GRAPHICAL REPLAY DEVICE TO CONTROL PLAYBACK OF TEMPORAL DATA REPRESENTING COLLABORATIVE ACTIVITIES

Thomas P. Moran, Palo Alto; William J. van Melle, Los Altos, both of Calif.; Gordon P. Kurtenbach, Toronto, Canada, and Patrick Chiu, Menlo Park, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 3, 1995, Appl. No. 552,648

Int. Cl. G07F *17/21*

U.S. Cl. 707—500.1 **14 Claims**



1. A computer controlled display system for controlling the replay of a session captured on a plurality of media capture devices, wherein at last one of said plurality of media capture devices is a shared representation media, said shared representation media for creating and displaying graphical objects responsive to a user input, said computer controlled display system coupled to one or more players for replaying said session, said computer controlled display system comprising:

display

session input means for receiving temporal data of said captured session, said temporal data comprising timestreams and events;

user input means for enabling a user to interact with said computer controlled display system;

synchronization means for synchronizing playback of said session by said one or more players;

processing circuitry for generating display information from a timestream representing operations performed on said shared representation media, said display information for display in a window on said display, said window operating as a player for replaying the temporal sequence of operations performed on said shared representation media, said replay causing one or more graphical objects created by a user of said shared representation media during said session capture to be displayed in said window, and said window further operating as a user interface for controlling the playback of said session;

window control circuitry for detecting a user interaction on at least one of said one or more graphical objects presented during replay in said window, and user interaction causing replay of the temporal sequence of operations on said shared representation media to move to a new point in said temporal sequence of operations.

US 6,332,148 B1

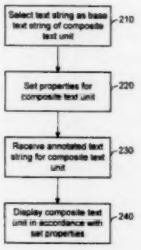
APPEARANCE AND POSITIONING ANNOTATION TEXT STRING AND BASE TEXT STRING SPECIFYING A RULE THAT RELATES THE FORMATTING ANNOTATION, BASE TEXT CHARACTERS

Mark A. Paine, San Francisco, and Jeff Young, San Jose, both of Calif., assignors to Adobe Systems Incorporated, San Jose, Calif.

Continuation of application No. 08/829,317, filed on Mar. 31, 1997, now abandoned. This application May 30, 1997, Appl. No. 865,661.

Int. Cl. G06F *17/30*

U.S. Cl. 707—512 **35 Claims**


Select text string as base text string of composite text unit
210
Set properties for composite text unit
220
Receive annotated text string for composite text unit
230
Display composite text unit in accordance with set properties
240

32. A method for editing a composite text unit in a document, the composite text unit including a base text string and an associated annotation text string, the composite text unit having composite text properties, wherein the base text string includes one or more base characters and the annotation text string includes one or more annotation characters, the method comprising:

displaying the composite text unit in context in a display of the document, the composite text unit being displayed in accordance with the composite text properties, wherein the composite text properties define and link the appearance and the positioning of the annotation text string and the base text string including specifying a rule that relates the formatting of the annotation characters to the formatting of the base characters;

receiving from a user editing commands to be applied to the annotation text string displayed as part of the composite text unit in the display of the document, the editing commands including instructions for changing a formatting of the annotation text string; and

editing the annotation text string in response to the editing commands while maintaining a relationship between the formatting of the annotation text string with the base text string in the composite text unit as defined by the composite text properties, the editing step including automatically editing the base text string to maintain the relationship between the formatting of the two strings; and

continuing to display the composite text unit in accordance with the composite text properties.

US 6,332,149 B1

IMPOSITION PROCESS AND APPARATUS FOR VARIABLE IMAGING SYSTEM

James L. Warmus, LaGrange; Mark G. Dreyer, Aurora, and J. Thomas Shively, Hinsdale, all of Ill., assignors to R. R. Donnelley & Sons, Downers Grove, Ill.

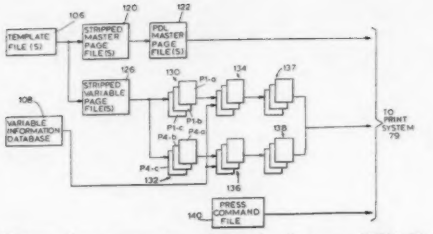
Continuation-in-part of application No. 08/627,724, filed on Apr. 2, 1996, now Pat. No. 5,857,209, and a continuation-in-part of application No. 08/478,397, filed on Jun. 7, 1995. This application Feb. 11, 1997, Appl. No. 802,337.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *17/21*

U.S. Cl. 707—517 **12 Claims**

1. A method for assembling pages for reproduction, comprising the steps of:



(A) generating a master page description language (PDL) file containing page descriptions of master pages with fixed information;

(B) generating a variable PDL file containing page descriptions of variable pages with variable information;

(C) RIPping the master and variable page descriptions in conjunction with imposition-on-the-fly procedures which impose the master and variable pages into a book format; and

(D) transmitting the imposed master and variable pages to a display device.

US 6,332,150 B1

INTEGRATED DOCUMENT DEVELOPMENT METHOD

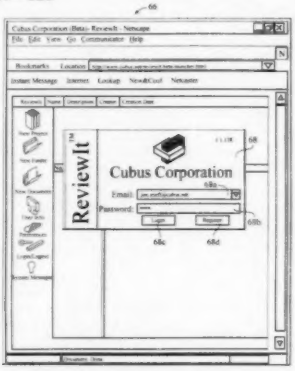
Azhar H. Khan; James G. Stiefel; Zaitrarrio T. Collier, all of San Francisco, Calif., and Benjamin J. Lee, Colonial Heights, Va., assignors to Cubus Corporation, San Francisco, Calif.

Filed Aug. 31, 1998, Appl. No. 144,363

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *15/00; 17/00*

U.S. Cl. 707—526 **38 Claims**



1. An integrated document development method employing a display, said method comprising:

segmenting said display into a plurality of regions;

displaying, in one of said regions, a subportion of viewable information associated with a document file;

displaying, in a second of said regions, a first message file, with said first message file providing information associated with said subportion;

displaying, in a third of said regions, a plurality of message headers, with each of said message headers providing a summary of content of a corresponding one of a plurality of message files; and

varying said subportion of said viewable information by displaying, in said second of said regions, a second message file.

US 6,332,151 B1

TIME DISCRETE FILTER

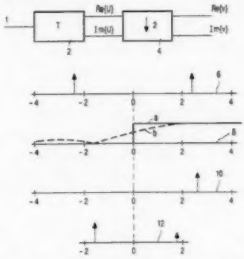
Adrianus W. M. Van Den Enden, Eindhoven, and Rutgerus E. E. F. Suermondt, Tau, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 20, 1999, Appl. No. 233,842

Claims priority, application European Pat. Off., Jan. 26, 1998, 98200218

Int. Cl. G06F *17/10*

U.S. Cl. 708—313 **12 Claims**



1. Time discrete filter comprising a cascade connection of a plurality of decimating filter sections, at least one of said filter sections comprising transformation means for transforming a real signal into a complex signal, characterized in that the transformation means have a transfer function with a transition band between a frequency in the pass band of the transformation means and a frequency to which a signal falling within said pass band is transferred at an output of said at least one of said filter sections.

US 6,332,152 B1

ARITHMETIC UNIT AND DATA PROCESSING UNIT

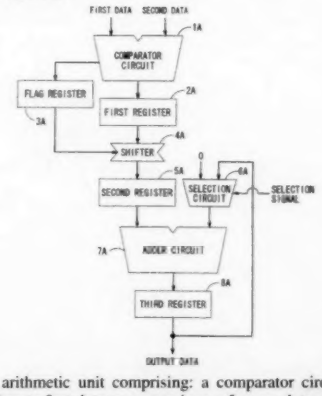
Masahiro Ohashi; Mana Hamada; Tomonori Yonezawa; Shunichi Kurohmaru; Yasuo Kouhashi; Masatoshi Matsuo, and Masayoshi Toujima, all of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 30, 1998, Appl. No. 201,720

Claims priority, application Japan, Dec. 2, 1997, 9-331417

Int. Cl. G06F *7/38;* **H03M** *7/50*

U.S. Cl. 708—490 **2 Claims**



1. An arithmetic unit comprising: a comparator circuit which takes as inputs first data as comparison reference data and second data as data to be compared with said first data, and performs a comparison between said first and said second data, and which, when said first and said second data match as the result of said comparison, outputs a value 1 and sets a match signal active, and when said first and said second data do not match, outputs said second data and sets said match signal inactive; a shifter to which an output of said comparator circuit is input, and which shifts, or does not shift, the output of said comparator circuit, depending on

the state of said match signal supplied from said comparator circuit; an adder circuit which accepts an output of said shifter at one input thereof; a register to which an output of said adder circuit is input; and a selection circuit which accepts a value 0 at one input thereof and an output of said register at the other input, and which couples one or the other of said inputs to the other input of said adder circuit in accordance with a selection signal, and wherein:

with said selection circuit selecting either said value 0 or the output of said register in accordance with said selection signal, when said first and said second data do not match, said second data that does not match said first data is output by being paired with a count of the number of times that said second data matched said first data since the last occurrence of a mismatch between said first and said second data.

US 6,332,153 B1

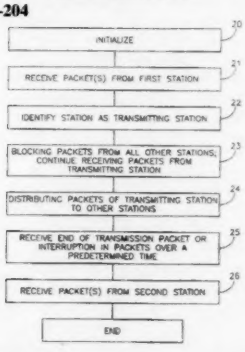
APPARATUS AND METHOD FOR MULTI-STATION CONFERENCING

Alon Cohen, Rishon LeZion, Israel, assignor to Vocaltec Communications Ltd., Herzliya, Israel

Filed Jul. 31, 1996, Appl. No. 688,959

Int. Cl. G06F *15/16*

U.S. Cl. 709—204 **8 Claims**



1. A method for multi-media half-duplex conferencing in a half-duplex conference server operating in a wide area network comprising a plurality of stations in communication with said half-duplex conference server, the method comprising the steps of:

receiving at least one packet at said half-duplex conference server from at least one station of said plurality of stations said at least one packet including a digital representation of information comprising at least audio information;

detecting voice activity from at least one of said plurality of stations for identifying at least one of said stations of said plurality of stations as a transmitting station; and

responding to said detecting voice activity including:

blocking packets from all other stations of said plurality of stations at said half-duplex conference server, except from said one transmitting station; and

distributing from said half-duplex conference server, at least one packet received from said transmitting station to at least one of any other of said stations of said plurality of stations that are operatively coupled to said half-duplex conference server.

US 6,332,154 B2

METHOD AND APPARATUS FOR PROVIDING MEDIA-INDEPENDENT SELF-HELP MODULES WITHIN A MULTIMEDIA COMMUNICATION-CENTER CUSTOMER INTERFACE

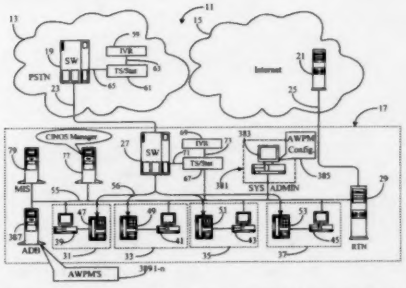
Christopher Clemmett Macleod Beck, Oceanside; Jonathan Michael Berke; Joel A Johnstone, both of San Diego; Robin Marie Mitchell, Cardiff; James Karl Powers, Carlsbad, all of Calif.; Mark Franklin Sidell, Chapel Hill, N.C., and Charles Dazler Knuff, Carksbad, Calif., assignors to Genesys Telecommunications Laboratories, Inc., San Francisco, Calif.

Filed Feb. 19, 1999, Appl. No. 253,554

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *15/16*

U.S. Cl. 709—204 **14 Claims**



8. A method for providing self-directed aid to clients of an enterprise-hosted multimedia call center (MMCC), comprising steps of:

(a) configuring a graphic self-help wizard interface including a media-selection function for a selected client associated with the enterprise, and presenting the wizard in a graphic display to a connected client;

(b) automatically updating the wizard with information periodically according to client transaction history with the enterprise; and

(c) establishing an interactive communication with the client in the media selected in step (a) whereby updated information my be provided to the client.

US 6,332,155 B1

SYSTEM AND PROCESS ALLOWING COLLABORATION WITHIN AND BETWEEN ENTERPRISES FOR OPTIMAL DECISION MAKING

Ranjit N. Notani, Irving, Tex., assignor to i2 Technologies US, Inc., Dallas, Tex.

Continuation of application No. 09/092,348, filed on Jun. 5, 1998, now Pat. No. 6,119,149. This application Aug. 2, 2000, Appl. No. 631,367.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *15/16*

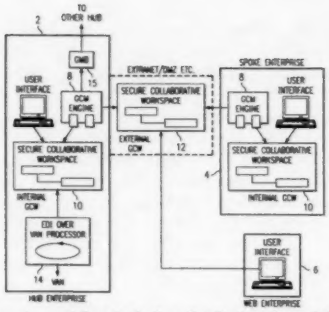
U.S. Cl. 709—205 **44 Claims**

1. A computer-implemented system for providing multi-enterprise collaboration, comprising:

a collaboration designer operable to:

generate a workflow including at least one heterocast split and at least one heterocast join that allow at least one activity in the workflow to be parameterized, where at least one of the parameters comprises nodes within a node group;

instantiate the workflow such that the parameterized activity is instantiated as a plurality of activities each tailored to a particular node in the node group; and



deploy the workflow including distributing the activities over the nodes in the node group; and

a collaboration manager operable to execute the workflow to provide multi-enterprise collaboration.

US 6,332,156 B1

E-MAIL PROCESSING METHOD

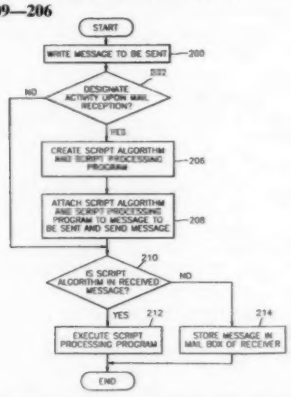
Won-bong Cho; Sang-youl Lee, both of Seongnam, and Ho-woong Hwang, Incheon, all of Rep. of Korea, assignors to Samsung Electronic Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Apr. 23, 1998, Appl. No. 64,596

Claims priority, application Rep. of Korea, Jul. 15, 1997, 97-32931

Int. Cl. G06F *15/16;13/00*

U.S. Cl. 709—206 **3 Claims**



3. An e-mail processing method comprising the steps of:

creating a message having a message header and a message body, containing data to be sent to a recipient;

creating an executable script algorithm and a script processing program for perfoming an activity, attaching said script algorithm and said script processing program to said message, and sending said script algorithm and said script processing program along with said message to a recipient; and

receiving said message, determining whether a script algorithm is attached to said received message, and automatically executing said script processing program if said script algorithm is attached to said received message.

US 6,332,157 B1

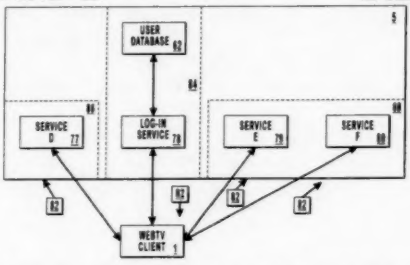
METHOD OF ACCESSING MULTIPLE SERVICES FROM MULTIPLE SERVICE PROVIDERS

Lee S. Mighdoll, San Francisco; Bruce A. Leak, Palo Alto; Stephen G. Perlman, Mountain View, and Phillip Y. Goldman, Los Altos, all of Calif., assignors to WebTV Networks, Inc., Mountain View, Calif.

Division of application No. 08/656,924, filed on Jun. 3, 1996, now Pat. No. 5,918,013. This application Jun. 29, 1999, Appl. No. 343,068.

Int. Cl. G06F *15/16*

U.S. Cl. 709—217 **16 Claims**



1. In a networked computer system includes a server system having a plurality of remote servers and a plurality of proxy servers, and a plurality of client systems, all of which are logically interconnected so that the client systems can access informational content stored at the one or more remote servers, and wherein at least one of the client systems is comprised of an electronics unit which provides a graphical user interface by which the Internet can be accessed and browsed using a conventional television set as a display, a method of improving access to services requested by a client system, by dynamically balancing the workload for a requested service among a plurality of service providers capable of responding to the requested service, comprising steps for:

at one of the servers of the server system, determining the validity of a log-in request received from a client system;

at the server determining the validity of the log-in request, generating at the time of log-in a list of services that can be accessed by the client system, wherein the list of services includes available service providers located within the server system so that if one or more of the service providers of a requested service becomes unavailable, the client system can look to any other listed service provider for the requested service, whereby the server system more efficiently balances the workload of providing the requested service; and

downloading to the client system the list of services together with available service providers for each service so that the client system can use the downloaded list of services in accessing the requested service.

US 6,332,158 B1

DOMAIN NAME SYSTEM LOOKUP ALLOWING INTELLIGENT CORRECTION OF SEARCHES AND PRESENTATION OF AUXILIARY INFORMATION

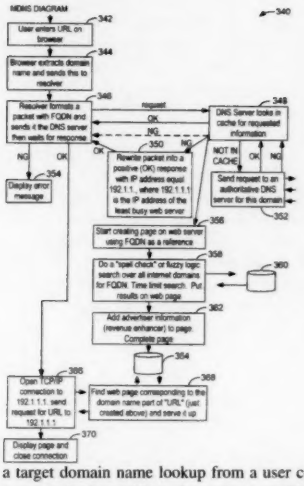
Chris Risley, 372 Stevick Dr., Atherton, Calif. 94027; Richard Lamb, 11 Roxbury Ave., Natick, Mass. 01760, and Eduard Guzovsky, 11 Page Rd., Weston, Mass. 02493

Continuation-in-part of application No. 09/204,855, filed on Dec. 3, 1998, now abandoned. This application Dec. 9, 1998, Appl. No. 207,701.

Int. Cl. G06F *13/00*

U.S. Cl. 709—219 **22 Claims**

1. A method for handling invalid domain name lookup requests in the Internet, the method executing in a domain name server system responsive to a target domain name request by a user computer, wherein the user computer is coupled to a display screen, the method comprising the following steps executed in the domain name server system


MDNS DIAGRAM
340
User enters URL on browser
342
Browser extracts domain name and sends this to resolver
344
Resolver formats a packet with FQDN and sends it the DNS server then waits for response
346
request
OK
NG
DNS Server looks in cache for requested information
348
NG
OK
NG
OK
NOT IN CACHE
OK
NG
Rewrite packet into a positive (OK) response with IP address equal 192.1.1. , where 192.1.1.1 is the IP address of the least busy web server.
350
Send request to an authoritative DNS server for this domain
352
Display error message
354
Start creating page on web server using FQDN as a reference
356
Do a "spell check" or fuzzy logic search over all internet domains for FQDN. Time limit search. Put results on web page.
358
360
Add advertiser information (revenue enhancer) to page. Complete page.
362
364
Open TCP/IP connection to 192.1.1.1, send request for URL to 192.1.1.1
366
Find web page corresponding to the domain name part of "URL" (just created above) and serve it up
368
Display page and close connection
370

receiving a target domain name lookup from a user computer;

searching a master lookup table to determine a machine address associated with the domain name;

determining that the target domain name does not exist within the lookup table;

transmitting a machine address to the user computer, wherein the machine address maps to a web server;

receiving a machine address request from the user computer based on the target domain name transmitted machine address to the user computer;

in response to the received machine address, sending information to the user computer to assist in that user's selection of a most likely domain name that assumes a misspelling of the target domain name; and

displaying an advertisement on the user computer's display screen.

US 6,332,159 B1
DATA COMMUNICATION SYSTEM, APPARATUS AND CONTROLLING METHOD THEREOF

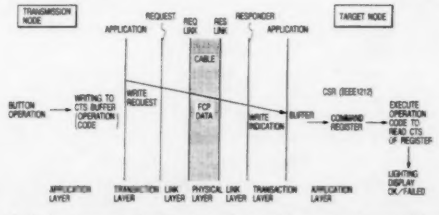
Shinichi Hatae, Kawasaki, and Takashi Kobayashi, Mitaka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1997, Appl. No. 985,115

Claims priority, application Japan, Dec. 4, 1996, 8-324454; Dec. 4, 1996, 8-324455; Dec. 12, 1996, 8-332570; Dec. 2, 1997, 9-331690

Int. Cl. G06F *15/16*

U.S. Cl. 709—224 **14 Claims**



1. A data communication apparatus, said apparatus comprising:

(a) a communication unit arranged to query each of a plurality of devices to obtain contents of a first register and a second register, the first register storing a channel number which is used to transmit data and the second register storing a channel number which is used to receive data;

(b) a detector arranged to detect a flow of data between a first device and a second device based on the contents of the first register and the second register; and

(c) a display controller arranged to control a display unit to display the flow of the data between the first device and the second device.

US 6,332,160 B1
METHOD FOR MATCHING DISTRIBUTED TRANSACTIONS AND MACHINE-READABLE RECORDING MEDIUM WITH METHOD PROGRAMS

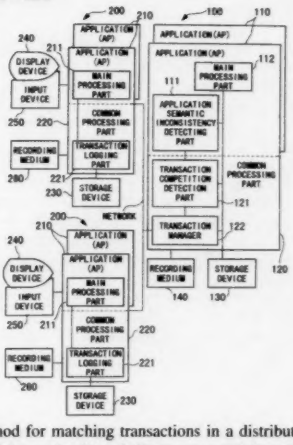
Masahiro Tabuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 25, 1998, Appl. No. 104,356

Claims priority, application Japan, Jun. 27, 1997, 9-187401

Int. Cl. G06F *15/173*

U.S. Cl. 709—224 **20 Claims**



1. A method for matching transactions in a distributed network system servicing a plurality of clients connected through a network server comprising a transactions manager, a transaction conflict detection section and a plurality of network applications, each network application comprising a semantics conflict detection section specific to a task, comprising:

forwarding a transaction generated by a change-data operation requested by a user application to said transactions manager;

recording said transaction in a memory device of said network server and preparing an execution thread for each received transaction to process a plurality of transactions in parallel;

inspecting said transaction for accessing conflicts with respect to a group of data common to other transactions by using said transaction conflict detection section;

requesting network applications to inspect for semantics conflicts in access-conflicting transactions by a using respective semantics conflict detections section;

comparing access-conflicting transactions to detect a semantics conflict by using a respective semantics conflict detection section in each network application;

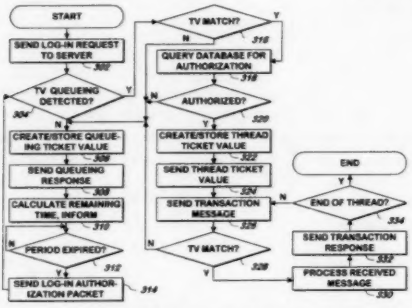
when no semantics conflict is detected, continuing execution of said transaction in said transactions manager;

when a semantics conflict is detected, receiving in said transactions manager, from a semantics conflict detection section, an address of a processing routine having a method consistent with contents of said semantics conflict for resolving said semantics conflict, and executing said processing routine in said transactions manager, thereby resolving said semantics conflict.

US 6,332,161 B1
CUSTOMER WEB LOG-IN ARCHITECTURE

Gideon Sasson, Palo Alto, Calif., assignor to Charles Schwab & Co., Inc., San Francisco, Calif.

Filed Sep. 25, 1998, Appl. No. 161,325
Int. Cl. G06F *15/16*
U.S. Cl. 709—227 **26 Claims**



1. A method for queuing messages between a first computer configured to send and receive messages and a second computer configured to send and receive messages, the method comprising:

sending from the first computer to the second computer a first message;

in response to the second computer receiving the first message, sending from the second computer to the first computer a second message comprising an indication of a first period of time, during which the second computer performs a task; and

in response to the first computer receiving the second message and a determination that the first period of time has expired, sending from the first computer to the second computer a third message; and

wherein the first period of time is determined responsive to a ratio of a number of tasks to be performed during the first period of time and a predetermined maximum number of tasks to be performed during a predetermined maximum period of time.

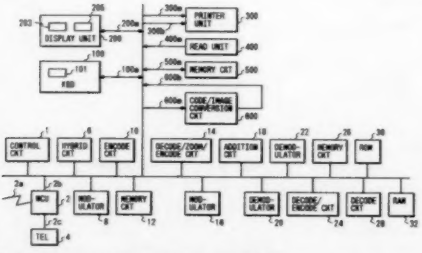
US 6,332,162 B1
DATA PROCESSING APPARATUS WITH COMMUNICATION FUNCTION

Takehiro Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of application No. 08/324,990, filed on Oct. 18, 1994, now abandoned. This application Aug. 5, 1997, Appl. No. 906,158.

Claims priority, application Japan, Oct. 19, 1993, 5-284298; Oct. 11, 1994, 6-271750

Int. Cl. G06F *15/16*
U.S. Cl. 709—228 **9 Claims**



1. A data processing apparatus comprising:

data process means for effecting a data process such as calculations;

data communication means for effecting a data transmission or reception process in accordance with a communication mode;

control means for controlling said data process means and said data communication means such that the process by said data process means and the process by said data communication means are effected in a time sharing manner;

selection means for selecting a proper parameter relating to processing efficiency of said data communication means, in case of effecting the two processes by said control means in the time sharing manner; and

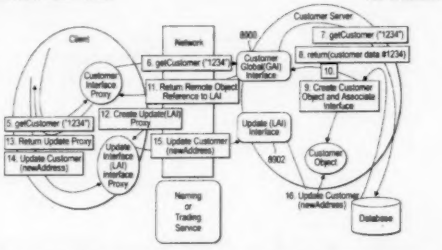
setting means for setting whether or not it is permitted that throughout of the process by said data processing means is made smaller than a predetermined level,

wherein said selection means is set not to be permitted by said setting means, and selects a parameter which is possible to keep the predetermined level, in a case where the predetermined level can not be kept by said control means.

US 6,332,163 B1
METHOD FOR PROVIDING COMMUNICATION SERVICES OVER A COMPUTER NETWORK SYSTEM

Michel K. Bowman-Amuah, Colorado Springs, Colo., assignor to Accenture, LLP, Palo Alto, Calif.

Filed Sep. 1, 1999, Appl. No. 387,642
Int. Cl. G06F *13/00*
U.S. Cl. 709—231 **15 Claims**



1. A method for implementing communication services patterns, comprising the steps of:

(a) providing a fixed format stream-based communication system;

(b) delivering service via a globally addressable interface;

(c) affording access to a legacy system;

(d) delivering service via a locally addressable interface;

(e) communicating a null value;

(f) transmitting data from a server to a client via pages;

(g) interfacing a naming service and a client, the naming service allowing access to a plurality of different sets of services from a plurality of globally addressable interfaces;

(h) calling the naming service for receiving locations of the global addressable interfaces;

(i) generating proxies based on the received locations of the global addressable interfaces as a result of the calls;

(j) receiving the proxies in an allocation queue;

(k) allocating the proxies of the allocation queue in a proxy pool;

(l) allowing access to the proxies in the proxy pool for identifying the location of one of the global addressable interfaces in response to a request received from the client;

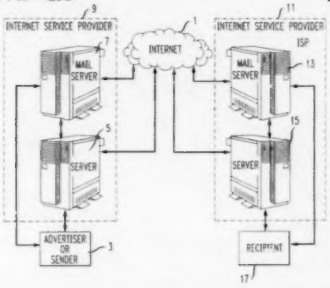
(m) providing a stream-based communication system; and

(n) efficiently retrieving data.

US 6,332,164 B1
SYSTEM FOR RECIPIENT CONTROL OF E-MAIL MESSAGE BY SENDING COMPLETE VERSION OF MESSAGE ONLY WITH CONFIRMATION FROM RECIPIENT TO RECEIVE MESSAGE

Ajay Jain, Holmdel, N.J., assignor to AT&T Corp., New York, N.Y.

Filed Oct. 24, 1997, Appl. No. 957,464
Int. Cl. G06F *15/16*
U.S. Cl. 709—235 **22 Claims**



1. A method for controlling a transfer of an electronic message over a computer network, comprising the steps of:

a) receiving an electronic message from an originator to be transmitted to a recipient over the computer network;

b) storing a complete version of the electronic message in a mail server;

c) forwarding a brief message to recipient indicating that the electronic message exists and asking if the recipient desires to receive a parsed version of the electronic message;

d) transmitting the parsed version of the electronic message to the recipient upon receiving an indication that the recipient desires to receive the parsed version in response to the request in step c); and

e) formatting the parsed version of the electronic message to include a mail server address where the electronic message is stored.

US 6,332,165 B1
MULTIPROCESSOR COMPUTER SYSTEM EMPLOYING A MECHANISM FOR ROUTING COMMUNICATION TRAFFIC THROUGH A CLUSTER NODE HAVING A SLICE OF MEMORY DIRECTED FOR PASS THROUGH TRANSACTIONS

Erik E. Hagersten, Palo Alto, Calif.; Christopher J. Jackson, Westford, and Hien Nguyen, Auburndale, both of Mass., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Continuation-in-part of application No. 08/924,385, filed on Sep. 5, 1997. This application Sep. 4, 1998, Appl. No. 148,736.
Int. Cl. G06F *15/173;15/16*
U.S. Cl. 709—238 **19 Claims**

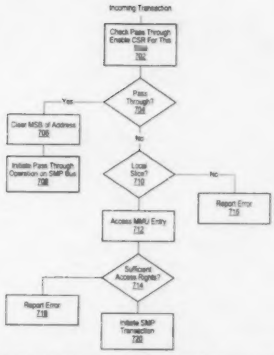
1. A multiprocessing computer system comprising:

a first node including a processor coupled to a memory through a first local bus, wherein said first node further includes a first system interface coupled to said first local bus and configured to receive transactions initiated by said processor upon said first local bus which are destined to remote nodes;

a second node including a second system interface coupled to said first system interface through a global interconnect network, wherein said second node includes a second local bus; and

a third node including a third system interface coupled to said second system interface through said global interconnect network, and wherein said third node includes a memory coupled to said third system interface through a third local bus;

wherein said first system interface is configured to transmit a transaction request to perform an operation upon said memory



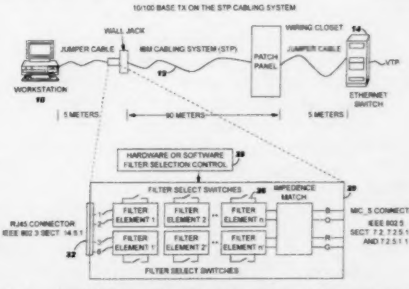
of said third node through said global interconnect network to said second system interface; and

wherein said second system interface is programmable to identify said second node as a pass through node for transactions received via said global interconnect network which are directed to a first slice of memory, and wherein said second system interface is configured to generate a pass through transaction corresponding to a first transaction request received upon said global interconnect network in response to detecting said first transaction request is directed to said first slice of memory, wherein said pass through transaction is directed to said third node.

US 6,332,166 B1
ADAPTIVE INTERFACE APPARATUS AND METHOD FOR DATA TERMINAL ELEMENTS IN A COMMUNICATION NETWORK TRANSMITTING AND RECEIVING ETHERNET OVER A SHIELDED TWISTED PAIR CABLING SYSTEM

Hayden Clavie Cranford, Jr., Apex; Joseph Ronald Efferson, Jr., Raleigh; Theodore Allen Gary, Apex; Steven Howard Johnson, Cary; Gregg Kreielsheimer, Raleigh, and Mark Edmund Scheuer, Wake Forest, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Provisional application No. 60/112,483, filed on Dec. 16, 1998. This application Dec. 15, 1999, Appl. No. 465,480.
Int. Cl. G06F *15/16*
U.S. Cl. 709—250 **17 Claims**



1. A controllable interface adapter for transmitting and receiving Ethernet over a first cable system, comprising:

i) an Ethernet installation having first characteristic impedance and a first connector pin configuration;

ii) the first cable system having second characteristic impedance and a second connector pin configuration;

iii) means for transforming the second connector pin configuration to the first connector pin configuration;

iv) means for transforming the second characteristic impedance to the first characteristic impedance; and

v) controllable means for emulating amplitude attenuation and phase effects in the first cable system to match that of the Ethernet installation.

US 6,332,167 B1

MULTITHREADED BATCH PROCESSING SYSTEM

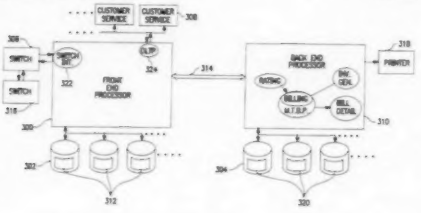
Michael S. Peters; Clayton Walter Holt, both of Greensboro, and David J. Arnold, Jr., Asheboro, all of N.C., assignors to Teleflex Information Systems, Inc., Greensboro, N.C.

Continuation of application No. 08/229,526, filed on Apr. 19, 1994, now Pat. No. 5,668,993, which is a continuation of application No. 08/203,531, filed on Feb. 26, 1994, now abandoned. This application Jun. 4, 1997, Appl. No. 868,942.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *9/40*

U.S. Cl. 709—318 **22 Claims**



1. A method for processing a plurality of discrete events in a processing system having at least one processor, each discrete event comprising a plurality of independent sub-events, said method comprising the steps of:

distributing each discrete event into one of a plurality of segments, each segment comprising a sequence of a plurality of discrete events to be processed;

initiating each of said plurality of segments to execute concurrently on said at least one processor;

for each segment, processing each discrete event contained within said segment sequentially; and

for each discrete event, processing each independent sub-event of said discrete event sequentially and then storing the results of said processing.

US 6,332,168 B1

METHOD OF, SYSTEM FOR, AND COMPUTER PROGRAM PRODUCT FOR PROVIDING A RUN TIME SUBSYSTEM FOR RUN TIME LIBRARIES

Daniel E. House, San Jose; Eric L. Porter, Fremont; Robert M. Smith, Morgan Hill, and Michael T. Wheatley, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1995, Appl. No. 535,497

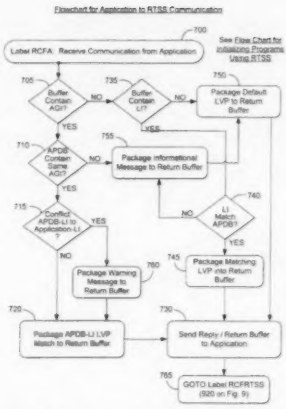
Int. Cl. G06F *9/00;9/24;9/445*

U.S. Cl. 709—331 **49 Claims**

1. A computer-implemented system for dynamically linking an application program to a run time library, comprising:

(a) a central repository for storing information regarding usage of run time libraries in a computer, wherein the information identifies which run time libraries are linked to which application programs and where to load the run time libraries;

(b) a run time subsystem, executed by the computer separately from any application program, for using the run time libraries in accordance with the information stored in the central repository, wherein the run time subsystem determines at the application program's initialization which of the run time



libraries to link with the application program and then links the application program and the run time libraries.

US 6,332,169 B1

MULTIPROCESSING SYSTEM CONFIGURED TO PERFORM EFFICIENT BLOCK COPY OPERATIONS

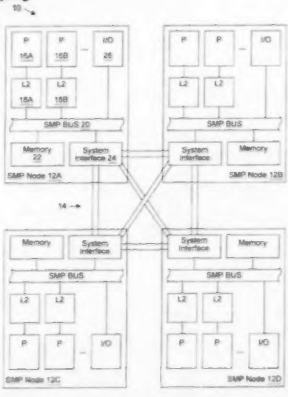
Erik E. Hagersten, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Continuation of application No. 08/674,269, filed on Jul. 1, 1996, now Pat. No. 5,892,970. This application Dec. 18, 1998, Appl. No. 216,506.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *3/00*

U.S. Cl. 710—5 **36 Claims**



1. An apparatus for performing block copy operations, comprising:

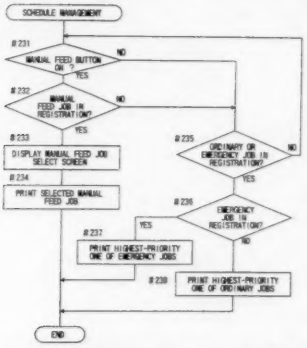
a processor configured to initiate a memory operation having a corresponding address, wherein a read operation is specified if said corresponding address resides in a first specific predefined region of an address space, and wherein a write operation is specified if said corresponding address resides in a second specific predefined region of said address space; and

a system interface coupled to receive said memory operation and said corresponding address, wherein said system interface is configured to detect said read operation responsive to said corresponding address residing in said first specific predefined region, and wherein said system interface is further configured to transmit a read request via a network in response to said read operation.

US 6,332,170 B1
PRINTING APPARATUS WITH JOB INTERRUPT CAPABILITIES AND CONTROL METHOD THEREOF

Shinichi Ban, Kobe, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 10, 1998, Appl. No. 189,420
Claims priority, application Japan, Nov. 11, 1997, 9-308424
Int. Cl. G06F *3/12;15/17;13/10*
U.S. Cl. 710—6 **20 Claims**



8. A printing apparatus connected with a plurality of external devices by a network, comprising:

an automatic sheet feeder for housing a sheet to be printed on in advance and feeding said sheet automatically;

a manual sheet feeder which allows a user to manually set a sheet to be printed on;

a receiving section for receiving and accumulating a plurality of print jobs transmitted from said external devices, said print jobs including a first print job with specific attribute information added thereto and a second print job with no specific attribute information added thereto;

an operation input unit for inputting an instruction to execute said first print job by operation of a user; and

a controller for executing said second print job in the order of accumulation in said receiving section, and for, when the instruction is input through said operation input unit, suspending the execution of said second print job and executing said first print job;

wherein said controller executes said first print job only when the instruction is input through said operation input unit, and said specific attribute information indicates that said manual sheet feeder is the first to feed a sheet for said first print job.

US 6,332,171 B1
SELF-CONTAINED QUEUES WITH ASSOCIATED CONTROL INFORMATION FOR RECEIPT AND TRANSFER OF INCOMING AND OUTGOING DATA USING A QUEUED DIRECT INPUT-OUTPUT DEVICE

Michael E. Baskey, Wappingers Falls; Frank W. Brice, Hurley; Steven G. Glassen, Wallkill; Eugene P. Hefferon, Poughkeepsie; Bruce H. Ratcliff, Red Hook, all of N.Y.; Arthur J. Stagg, Raleigh, N.C., and Stephen R. Valley, Valatie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

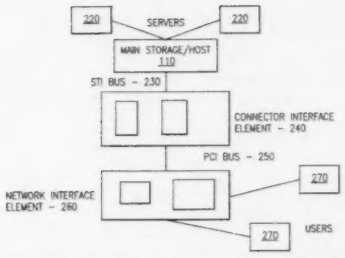
Filed Feb. 19, 1999, Appl. No. 253,248
Int. Cl. G06F *13/14*
U.S. Cl. 710—39 **37 Claims**

1. In a network environment having a main storage, a queuing mechanism apparatus established in said main storage for receipt and transfer of incoming and outgoing data comprising:

at least one set of dedicated input queues;

at least one set of dedicated output queues;

a plurality of queuing components providing attributes of devices to and from which data is to be transferred or received as well as information about the queue mechanism itself;



said input and output queues having an information block containing address of all input and output queues;

said input and output queues also having a storage information block providing information about said queue mechanism, said block providing storage list information blocks defined for each queue which contains specific information about that queue;

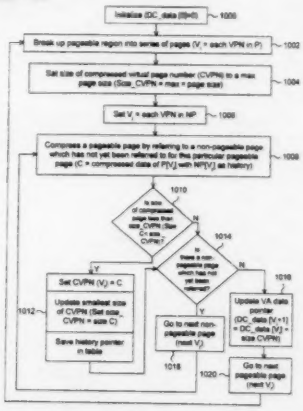
said input and output queue sets further having storage lists for identifying any input-output buffer(s) associated with each queue-set;

said input and output queue sets having a storage block address list for providing information about storage locations of any input-output buffer.

US 6,332,172 B1
METHOD AND SYSTEM FOR VIRTUAL MEMORY COMPRESSION IN AN EMBEDDED SYSTEM

Timothy J. Iverson, Los Gatos, Calif., assignor to Cisco Technology, Inc., San Jose, Calif.

Filed May 29, 1998, Appl. No. 87,382
Int. Cl. G06F *12/00*
U.S. Cl. 710—68 **6 Claims**


Initialize (DC_data [0]=0)
1000
Break up pageable region into series of pages (V = each VPN in P)
1002
Set size of compressed virtual page number (CVPN) to a max page size (Size_CVPN = max = page size)
1004
Set V = each VPN in NP
1006
Compress a pageable page by referring to a non-pageable page which has not yet been referred to for this particular pageable page (C = compressed data of P[V] with NP[V] as history)
1008
1010
Is size of compressed page less than size_CVPN (Size C< size_CVPN) ?
N
Y
1014
Is there a non-pageable page which has not yet been referred?
N
Y
1016
Set CVPN (V) = C
1012
Update smallest size of CVPN (Set size_ CVPN = size C)
Save history pointer in table
Go to next non-pageable page (next V)
1018
Update VA data pointer (DC_data [V+1] = DC_data [V] + size CVPN)
Go to next pageable page (next V)
1020

1. A method for compressing data for use in an embedded computer system, a set of fundamental operations of the embedded computer system being run from RAM, the method comprising:

prior to run-time, identifying a first portion of a memory image that at run-time is pageable and a second portion of a memory image that at run-time is non-pageable, said second portion including a set of fundamental operating instructions that at run-time are loaded into RAM, said second portion including at least one non-pageable page;

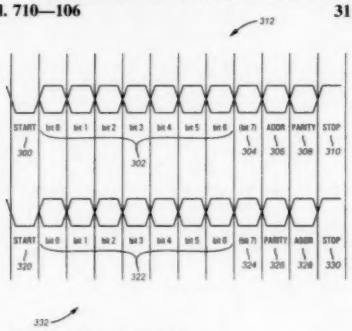
dividing said first portion into a plurality of pageable pages; and

at an image production time prior to run time, compressing a pageable page by referring to the at least one non-pageable page.

US 6,332,173 B2
UART AUTOMATIC PARITY SUPPORT FOR FRAMES WITH ADDRESS BITS

Melanie D. Typaldos, Buda, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 31, 1998, Appl. No. 183,945
Int. Cl. G06F *1/32;3/00;13/38;13/10;13/00*
U.S. Cl. 710—106 **31 Claims**



1. A microcontroller, comprising:

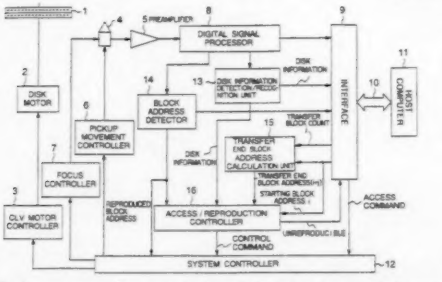
an execution unit for executing instructions; and

an asynchronous serial port coupled to the execution unit for communicating asynchronous frames, a frame including start bits, data bits, parity bits, address bits and stop bits, the asynchronous serial port being selectively configured to generate and detect a frame including a parity bit selectably located directly following a last data bit and preceding an address bit or directly following an address bit.

US 6,332,174 B1
DIGITAL SIGNAL REPRODUCING APPARATUS

Hiroshi Hirayama; Osamu Kawamae; Masayuki Hirabayashi; Yutaka Nagai, and Toshifumi Takeuchi, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of application No. 09/084,931, filed on May 28, 1998, now Pat. No. 6,076,135, which is a division of application No. 08/669,245, filed on Jun. 24, 1996, now Pat. No. 5,966,721. This application Jun. 29, 1999, Appl. No. 342,175. Claims priority, application Japan, Jun. 26, 1995, 7-158931
Int. Cl. B11B *7/24*
U.S. Cl. 711—4 **3 Claims**



1. An apparatus for reproducing digital signals recorded on a disk,

the disk having at least a first recording surface and a second recording surface,

the digital signals being in the form of a data frame,

the data frame including at least a lead-in block and n data blocks (n is a natural number),

the lead-in block having a same format as the n data blocks,

n block addresses being assigned to respective ones of the n data blocks,

information identifying an area on the disk in which a respective one of the n data blocks is recorded being assigned to each of the n data blocks,

m data blocks (m is a natural number, 0<m<n) of the n data blocks being recorded on the first recording surface of the disk,

remaining (n−m) data blocks of the n data blocks being recorded on the second recording surface of the disk,

the lead-in block being recorded at the head of the data frame, the lead-in block including

information identifying an area on the disk in which the lead-in block is recorded,

information identifying a number of recording surfaces,

information identifying the block address of one of the m data blocks recorded last on the first recording surface, and

information identifying the block address of a last one of the n data blocks in the data frame,

the apparatus comprising:

a lead-in block reproducing unit which reproduces the lead-in block recorded on the disk;

an information detecting unit which detects the information included in the reproduced lead-in block;

an accessing and reproducing unit which accesses and reproduces the data blocks recorded on the disk;

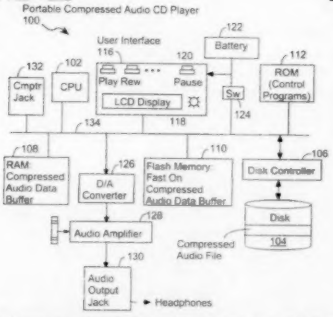
a block address detecting unit which detects the block addresses of the reproduced data blocks; and

a controlling unit which controls the accessing and reproducing unit based on the detected information included in the reproduced lead-in block and the detected block addresses of the reproduced data blocks.

US 6,332,175 B1
LOW POWER SYSTEM AND METHOD FOR PLAYING COMPRESSED AUDIO DATA

Andrew Birrell, Los Altos, Calif.; William Laing, Redmond, Wash., and Puneet Kumar, Mountain View, Calif., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Feb. 12, 1999, Appl. No. 249,183
Int. Cl. G06F *12/00;* **G11B** *17/22;3/90;27/36;* **G10L** *21/00*
U.S. Cl. 711—112 **11 Claims**



1. A self-contained portable audio player, comprising:

a disk storage unit for storing compressed audio data comprising a multiplicity of audio recordings;

a memory buffer for storing compressed audio data and a play list identifying a subset of the audio recordings and an order in which to play the identified subset of audio recordings;

a compressed audio data converter for converting compressed audio data in the memory buffer into a decompressed audio signal;

a communications port for transmitting the decompressed audio signal to a user; and

play control logic for copying compressed audio data from the disk storage unit into the memory buffer, wherein the copied data, when converted into a decompressed audio signal, has a

transmission time that is greater than an amount of time required to copy data from the disk storage unit into the memory buffer;

wherein the play control logic is configured to increase power to the disk storage unit, to enable copying of audio data from the disk storage unit into the memory buffer, when the amount of compressed audio data remaining to be converted by the compressed audio data converter reaches a threshold level unless the play list is empty, and is configured to decrease power to the disk storage unit when copying of compressed audio data from the disk storage unit into the memory buffer reaches a predefined stop condition.

US 6,332,176 B1

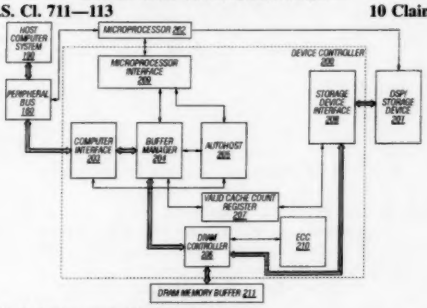
AUTOHOST CONTROLLER

Cheng-Chi Fang, Union City; Chao-I Chang, San Jose, both of Calif., and Ka Kit Ling, 1294 Hazlett Way, San Jose, Calif. 95131, assignors to Integrated Memory Logic, Inc., Campbell, and Ka Kit Ling, San Jose, both of Calif.

Filed Aug. 7, 1998, Appl. No. 130,999

Int. Cl. G06F *13/00;12/06;13/28;3/00*

U.S. Cl. 711—113 **10 Claims**



5. A device controller, comprising:

a memory buffer controller capable of reading and writing to a memory buffer;

a storage device interface capable of receiving data from and sending data to an external storage device in response to signals, the storage device interface receiving data from and sending data to the memory buffer controller;

a microprocessor controller communicating with a microprocessor, the microprocessor controlling the storage device interface;

a host interface communicating with a host computer through a peripheral interface;

a buffer manager that transfers data between the storage device interface and the host interface in response to directions from the microprocessor; and

an autohost that monitors command packets from the host computer and, if a autohost condition is met, controls the buffer manager in place of the microprocessor to transfer data between the memory buffer and the host interface,

wherein after a read operation, the buffer manager fills the memory buffer with data from the external storage data starting from the last address requested in the read operation plus one.

US 6,332,177 B1

N-WAY RAID 1 ON M DRIVES BLOCK MAPPING

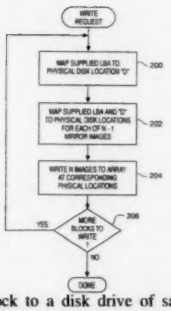
Donald R. Humlicek, Wichita, Kans., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 19, 1998, Appl. No. 174,790

Int. Cl. G06F *12/00;12/16*

U.S. Cl. 711—114 **5 Claims**

1. A method for mirroring data blocks in a disk array storage system having a plurality of disk drives comprising the steps of:


WRITE REQUEST
MAP SUPPLIED LBA TO PHYSICAL DISK LOCATION "0"
200
MAP SUPPLIED LBA AND "0" TO PHYSICAL DISK LOCATIONS FOR EACH OF N - 1 MIRROR IMAGES
202
WRITE N IMAGES TO ARRAY AT CORRESPONDING PHYSICAL LOCATIONS
204
MORE BLOCKS TO WRITE ?
206
YES
NO
DONE

writing a data block to a disk drive of said plurality of disk drives in said disk array storage system;

duplicating said data block in at least one duplicate block written on a corresponding disk drive of said plurality of disk drives in said disk array storage system; and

mapping said data block prior to the step of writing to determine a disk drive for said data block to be written to said disk array storage system and to determine a disk drive for each duplicate block of said at least one duplicate block to be written to said disk array storage system,

wherein the number of disk drives M in said plurality of disk drives is greater than the total number of blocks N written by the steps of writing and duplicating and wherein said data block is mapped to said disk drive and wherein said at least one duplicate block is mapped to said corresponding disk drive;

wherein said data block is associated with a logical block address and wherein the step of mapping comprises the steps of:

determining said disk drive for writing said data block as a function of said logical block address and N and M; and

determining said disk drive for writing each duplicate block of said at least one duplicate block as a function of said logical block address and N and M.

US 6,332,178 B1

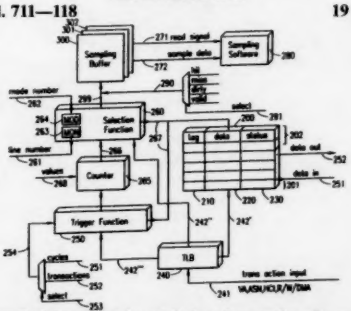
METHOD FOR ESTIMATING STATISTICS OF PROPERTIES OF MEMORY SYSTEM TRANSACTIONS

Jeffrey A. Dean, Menlo Park, Calif.; James E. Hicks, Jr., Newton, Mass.; Carl A. Waldspurger, Atherton, and William E. Weihl, San Francisco, both of Calif., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Nov. 26, 1997, Appl. No. 980,165

Int. Cl. G06F *9/00*

U.S. Cl. 711—118 **19 Claims**



1. A method for estimating statistics of properties of transactions processed by a memory sub-system of a computer system, comprising the steps of:

randomly selecting memory transactions processed by the memory sub-system;

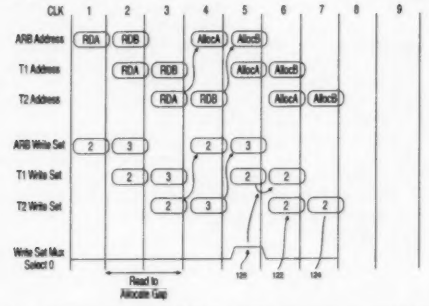
recording states of the system as samples while the selected transaction are processed by the memory sub-system; and

statistically analyzing the recorded states from a subset of the selected transactions to estimate statistics of the memory transactions, wherein the subset of selected transactions is chosen as a function of the recorded states, and wherein the function selects on the basis of addresses accessed by the selected transactions.

US 6,332,179 B1
ALLOCATION FOR BACK-TO-BACK MISSES IN A DIRECTORY BASED CACHE

Alexander E. Okpisz, and James N. Hardage, Jr., both of Austin, Tex., assignors to International Business Machines Corporation, Amonk, N.Y.

Filed Aug. 19, 1999, Appl. No. 377,636
Int. Cl. G06F *12/00*
U.S. Cl. 711—140 **28 Claims**



1. A memory system including a cache memory comprising:

a plurality of memory blocks, each memory block being associated with a tag stored in a directory; and

a controller for determining if the contents at a selected memory address are stored in the cache by comparing the selected memory address to the addresses stored in the directory, if the selected memory address is not in the cache, allocating a place in the directory for selected address, wherein, if a place in the directory for an address having the same cache line as the selected memory address is in the process of allocation or has been previously allocated, the selected memory address is allocated to that location of the pending allocation or previously allocated place in the directory.

US 6,332,180 B1
METHOD AND APPARATUS FOR COMMUNICATION IN A MULTI-PROCESSOR COMPUTER SYSTEM

James R. Kauffman, Nashua; Andrew H. Mason, Hollis, both of N.H., and Paul K. Harter, Jr., Groton, Mass., assignors to Compaq Information Technologies Group, L.P., Houston, Tex.

Filed Jun. 10, 1998, Appl. No. 95,264
Int. Cl. G06F *12/02*
U.S. Cl. 711—153 **33 Claims**

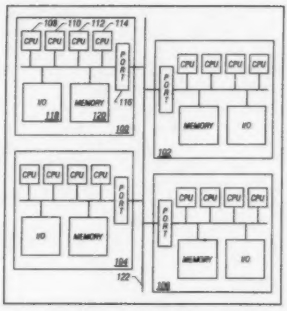
1. A computer system having a plurality of system resources including processors, memory and I/O circuitry, the computer system comprising:

an interconnection mechanism for electrically interconnecting the processors, memory and I/O circuitry so that each processor has electrical access to all of the memory and at least some of the I/O circuitry;

a software mechanism for dividing the system resources into a plurality of partitions;

at least one operating system instance running in each of a plurality of the partitions; and

a inter-instance communication apparatus that allows communication between a first instance running on a first partition and

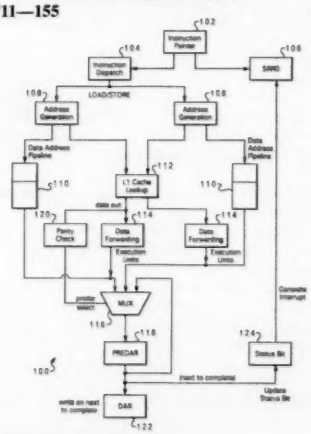


a second instance running on a second partition, wherein the communication apparatus modifies shared memory to which both instances have access, and wherein the communication apparatus can effect a given communication by modifying at least one bit of the shared memory, wherein the at least one bit that is modified is part of a notification bitvector of the second instance, the notification bitvector comprising a plurality of bits, each of which corresponds to a different predetermined event, and can have its value changed by the first instance to indicate the occurrence of the event to the second instance.

US 6,332,181 B1
RECOVERY MECHANISM FOR L1 DATA CACHE PARITY ERRORS

Douglas Craig Bossen, Austin; Kevin Arthur Chiarot, Pflugerville; Namratha Rajasekharaiah Jaisimha, and Avijit Saha, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1998, Appl. No. 72,324
Int. Cl. G06F *12/08; 11/00*
U.S. Cl. 711—155 **10 Claims**



7. A computer system comprising;

memory means for storing a plurality of values;

means for processing program instructions, said processing means including cache means for storing one or more values associated with respective addresses of said memory means;

means interconnecting said processing means with said memory means;

an operating system controlling said processing means;

means for handling an error in said cache means such that said processing means continues operation after the cache error without restarting the operating system, said handling means including means for defining a data storage interrupt service

having an associated data storage interrupt handler, means for generating a data storage interrupt, and means for indicating to is said data storage interrupt service that the data storage interrupt is a result of the error; and

synchronizing means for synchronizing a context of said processing means, wherein in response to a data storage interrupt resulting from a cache parity error, said synchronizing means loads a pointer in a machine status register of said processor, wherein the pointer points to a next-to-complete instruction such that all instructions preceding the next-to-complete instruction have already completed execution, and no instruction subsequent to the next-to-complete instruction has begun execution.

US 6,332,182 B1

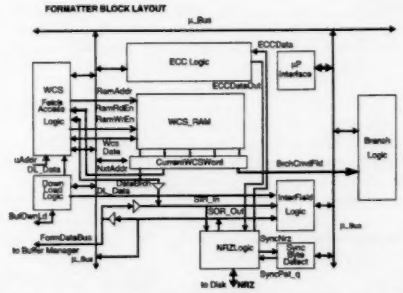
DISK DRIVE CONTROL WITHOUT IDENTIFICATION FIELDS

John S. Geldman, Los Gatos; Son H. Ho, San José; Petro Estakhrf, Pleasanton, all of Calif., and John J. Schadegg, Longmont, Colo., assignors to Cirrus Logic, Inc., Austin, Tex.

Division of application No. 08/810,829, filed on Mar. 6, 1997, which is a continuation of application No. 08/478,354, filed on Jun. 7, 1995, now Pat. No. 5,740,358, which is a continuation of application No. 07/905,588, filed on Jun. 26, 1992, now abandoned, which is a continuation-in-part of application No. 07/904,804, filed on Jun. 25, 1992, now abandoned. This application Oct. 22, 1999, Appl. No. 425,535.

Int. Cl. G06F *12/00*

U.S. Cl. 711—156 **8 Claims**



1. A disk drive controller for controlling the reading and writing of data to a magnetic disk without using ID fields within sectors of the magnetic disk, the disk drive controller comprising:

a processor for controlling the reading and writing of data to the magnetic disk;

a memory for holding in memory information pertaining to the control of the reading and writing of data to the magnetic disk;

a memory controller coupled to the memory and the processor, the memory controller for controlling writing and reading of memory information in the memory; and

a formatter controller coupled to the memory controller and the processor, the formatter controller for electrically coupling to the magnetic disk to read and write data thereto and the control thereof, the formatter controller including,

a linked list of a plurality of parameter lists for storage in the memory, each parameter list corresponding to each sector of the magnetic disk, each parameter list including sector status flags for a track indicating the last sector in the track before an index servo burst on the magnetic disk, a last sector in the track that contains fewer sectors than expected because of defective sectors in the track and a current sector in the track is defective or relocated, and each parameter list including a first split count indicating the size of the first split of a data field in a sector to process the data field in the sector without an ID field stored within the sector indicating its location on the magnetic disk in order to read and write data between the magnetic disk and the disk drive controller.

US 6,332,183 B1

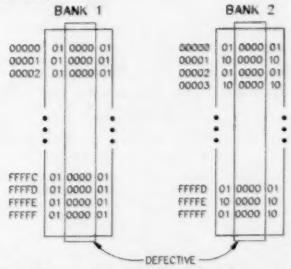
METHOD FOR RECOVERY OF USEFUL AREAS OF PARTIALLY DEFECTIVE SYNCHRONOUS MEMORY COMPONENTS

Richard Weber, Boise, and Corey Larsen, Marsing, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Mar. 5, 1998, Appl. No. 35,739

Int. Cl. G06F *12/02;11/00*

U.S. Cl. 711—170 **12 Claims**



1. A method of accessing a memory module comprising the acts of:

presenting a row address to the address inputs of each of a plurality of partially defective SDRAM components that have at least one unreliable data output, and that also have a plurality of valid data outputs, wherein the valid data outputs are data outputs that provide reliable and accurate data; and

presenting a column address to the address inputs of each SDRAM component;

aggregating the valid data outputs of each of the SDRAM components to provide a data path; and

communicating the data from the valid data outputs to a microprocessor.

US 6,332,184 B1

METHOD AND APPARATUS FOR MODIFYING MEMORY ACCESSES UTILIZING TLB ENTRIES

Paul W. Campbell, Oakland, Calif., assignor to ATI International, SRL, Barbados, Barbados

Filed Aug. 18, 1999, Appl. No. 376,831

Int. Cl. G06F *12/00*

U.S. Cl. 711—207 **22 Claims**

Translation look aside table 26

dirty bit	valid	virtual addr space	msb of virtual addr	MSBs of phys addr	transaction tag
1	1	vas 1	msb 1	msb 1	- read from memory & write to PCI
1	1	vas 2	msb 2	msb 2	- read from PCI & write to memory
0	1	vas 3	msb 3	msb 3	- exception for emulation
0	1	vas 4	msb 4	msb 4	- normal
0	1	vas 5	msb 5	msb 5	- in SMM, data to/from PCI memory space
0	1	vas 6	msb 6	msb 6	- in SMM, instr code from memory
0	1	vas 7	msb 7	msb 7	- in SMM and exception, data to/from an exception
0	1	vas 8	msb 8	msb 8	- in SMM and exception, instr code from memory

1. A method for modifying memory accesses, the method comprises the steps of:

a) receiving a memory access transaction;

b) determining whether a translation look aside table (TLB) entry exists for the memory access transaction;

c) when the TLB entry exists, interpreting a transaction tag within the TLB entry to identify an exception or a memory

address space from a plurality of address spaces without requiring knowledge of a memory access mode;

d) when the transaction tag identifies the memory address space, interpreting the TLB entry to obtain a physical address; and

e) processing the memory access transaction using the physical address within the memory address space.

US 6,332,185 B1

METHOD AND APPARATUS FOR PAGING DATA AND ATTRIBUTES INCLUDING AN ATOMIC ATTRIBUTE FOR DIGITAL DATA PROCESSOR

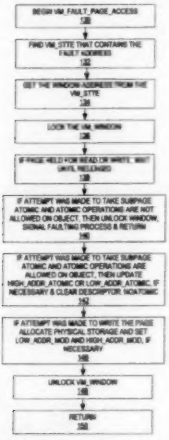
Mark A. Kaufman, Brighton, and Fernando Oliveira, Framingham, both of Mass., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Continuation of application No. 07/763,368, filed on Sep. 20, 1991, now abandoned. This application Jun. 5, 1995, Appl. No. 461,174.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *12/06;13/00*

U.S. Cl. 711—209 **36 Claims**


BEGIN VM_FAULT_PAGE_ACCESS
120
FIND VM_STTE THAT CONTAINS THE FAULT ADDRESS
122
GET THE WINDOW ADDRESS FROM THE VM_STTE
124
LOCK THE VM_WINDOW
126
IF PAGE HELD FOR READ OR WRITE, WAIT UNTIL RELEASED
128
IF ATTEMPT WAS MADE TO TAKE SUBPAGE ATOMIC AND ATOMIC OPERATIONS ARE NOT ALLOWED ON OBJECT, THEN UNLOCK WINDOW, SIGNAL FAULTING PROCESS & RETURN
150
IF ATTEMPT WAS MADE TO TAKE SUBPAGE ATOMIC AND ATOMIC OPERATIONS ARE ALLOWED ON OBJECT, THEN UPDATE HIGH_ADDR, ATOMIC OR LOW_ADDR, ATOMIC, IF NECESSARY & CLEAR DESCRIPTOR: NONATOMIC
152
IF ATTEMPT WAS MADE TO WRITE THIS PAGE ALLOCATE PHYSICAL STORAGE AND SET LOW_ADDR, MOD AND HIGH_ADDR_MOD, IF NECESSARY
148
UNLOCK VM_WINDOW
146
RETURN
152

1. A digital data processing apparatus comprising:

A. a primary data store for storing data for access by a process, said primary data store storing data in at least one storage location set, said at least one storage location set including at least one storage location subset;

B. a secondary data store for storing data in at least one data file;

C. a paging control coupled to said primary data store and said secondary data store for selectively transferring data between said storage location set in said primary data store and said data file, the paging means including:

i. a directory for storing at least one atomic attribute indicator, each atomic attribute indicator being associated with a said storage location set and indicative of an attribute of the data stored therein, and

ii. a page-out control for controlling transfer of data from a storage location subset of said storage location set to said associated data file, said page-out control including an atomic attribute indicator store control for, in response to the atomic attribute indicator associated with data in at least said storage location subset, storing to an associated status file on said secondary data store an attribute indicator associated with data in said storage location subset and indicative of said attribute.

US 6,332,186 B1

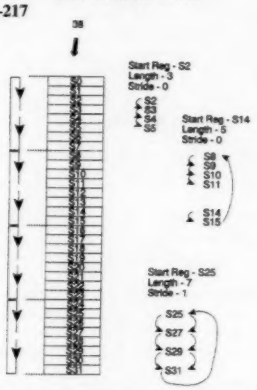
VECTOR REGISTER ADDRESSING

Matthew Paul Elwood, and Christopher Neal Hinds, both of Austin, Tex., assignors to ARM Limited, Cambridge, United Kingdom

Continuation-in-part of application No. 09/084,304, filed on May 27, 1998, now Pat. No. 6,282,634. This application Aug. 28, 1998, Appl. No. 143,449.

Int. Cl. G06F *12/00*

U.S. Cl. 711—217 **12 Claims**



1. Apparatus for data processing, said apparatus comprising:

a register bank having a plurality of registers for holding data values to be manipulated, each of said registers having a register address;

a memory accessing circuit responsive to at least one block memory access instruction for performing memory accesses between a plurality of contiguously addressed memory locations within a memory and a plurality of contiguously addressed registers within said register bank; and

an instruction decoder responsive to at least one vector processing instruction for sequentially executing a data processing operation a plurality of times upon operands stored within a predetermined sequence of said registers; wherein

between each execution of said data processing operation, said instruction decoder is responsive to a programmable stride value to increment a register address of a register storing an operand used in said data processing operation by an amount specified by said stride value.

US 6,332,187 B1

CUMULATIVE LOOKAHEAD TO ELIMINATE CHAINED DEPENDENCIES

David B. Witt, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of application No. 09/190,809, filed on Nov. 12, 1998, now Pat. No. 6,240,503. This application Mar. 8, 2001, Appl. No. 802,785.

This patent is subject to a terminal disclaimer.

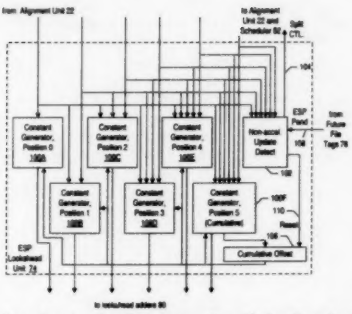
Int. Cl. G06F *9/30*

U.S. Cl. 712—23 **25 Claims**

1. A processor comprising:

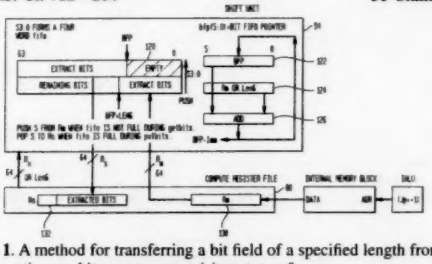
a storage location coupled to a circuit, wherein the storage location is configured to store a cumulative offset indicating a cumulative modification of a first value, wherein the first value is stored into a first register in response to a first non-accelerated operation corresponding to a first prior instruction, and wherein the cumulative modification is due to each instruction between the first prior instruction and a second prior instruction, the second prior instruction processed by the circuit in a first clock cycle; and

the circuit coupled to receive a first instruction in a second clock cycle subsequent to the first clock cycle, wherein the circuit is configured to update the cumulative offset to reflect a modi-



fication due to the first instruction if the first instruction includes a first accelerated operation to the first register, and wherein the circuit is configured to update the cumulative offset to an initial value if the first instruction includes a second non-accelerated operation to the first register, wherein the initial value is independent of instructions executed by the processor.

US 6,332,188 B1
DIGITAL SIGNAL PROCESSOR WITH BIT FIFO
Douglas Garde, Dover; Alexei Zatsman, Newton, both of Mass.; Aryeh Lezerovitz, Ramat Aziz; Zvi Greenfield, Kfar Sava, both of Israel; David R. Levine, Lexington, and Jose Fridman, Brookline, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.
Filed Nov. 6, 1998, Appl. No. 187,479
Int. Cl. G06F *9/315*
U.S. Cl. 712—204 **36 Claims**



1. A method for transferring a bit field of a specified length from a continuous bit stream, comprising steps of:

providing a computation block including an arithmetic logic unit, a multiplier, a shifter, and a register file;

providing a continuous bit stream of operands stored in a bit format in a plurality of registers; and

causing, in a single cycle, a transfer of a bit field of an arbitrary bit length between said plurality of registers and said shifter;

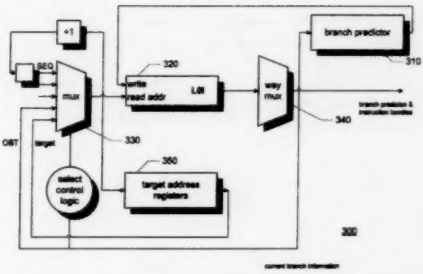
wherein each operand may span across more than one of the plurality of registers.

US 6,332,189 B1
BRANCH PREDICTION ARCHITECTURE
Gunjeet Baweja, Sunnyvale, and Harsh Kumar, Fremont, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Oct. 16, 1998, Appl. No. 174,150
Int. Cl. G06F *9/32*
U.S. Cl. 712—238 **27 Claims**

1. A branch prediction architecture comprising:

a branch predictor operable to provide a branch predictor output;

a target address device operable to provide a target address output;

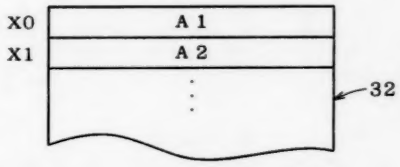


a first selector operable to receive the target address output and to provide a first selector output;

a first memory operable to receive the branch predictor output and the first selector output, and to provide a first memory output; and

a second selector operable to receive the first memory output, and to provide a second selector output.

US 6,332,190 B1
BRANCH PREDICTION METHOD USING A PREDICTION TABLE INDEXED BY FETCH-BLOCK ADDRESS
Tetsuya Hara, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 12, 1997, Appl. No. 968,209
Claims priority, application Japan, May 30, 1997, 9-142080
Int. Cl. G06F *9/00*
U.S. Cl. 712—240 **20 Claims**



1. A branch prediction method for predicting a branch direction of a first branch instruction to be executed in a processor, by using a prediction table which includes a plurality of entries for storing prediction information about executed results of branch instructions, including said first branch instruction, which have been previously executed, wherein a fetch block includes a plurality of instructions, including said first branch instruction, where said instructions are simultaneously fetched,

said branch prediction method comprising the steps of:

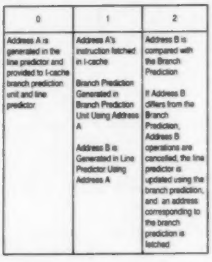
(a) referring to one of said entries for said prediction information before a first instruction serving as said first branch instruction is executed, if said instructions include said first instruction, said one entry being indexed by a full fetch block address which is a head address of said fetch block including said first instruction; and

(b) storing said prediction information in said one entry indexed by said full fetch block address of said fetch block, after said first instruction is executed, in the form of a result from the execution of said first instruction.

US 6,332,191 B1
SYSTEM FOR CANCELING SPECULATIVELY FETCHED INSTRUCTIONS FOLLOWING A BRANCH MIS-PREDICTION IN A MICROPROCESSOR

David B. Witt, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 19, 1999, Appl. No. 233,259
Int. Cl. G06F *9/32*
U.S. Cl. 712—240 **17 Claims**


0
1
2
Address A is generated in the line predictor and provided to I-cache branch prediction unit and line predictor
Address A's instruction fetched in I-cache
Branch Prediction Generated in Branch Prediction Unit Using Address A
Address B is Generated in Line Predictor Using Address A
Address B is compared with the Branch Prediction
If Address B differs from the Branch Prediction, Address B' operations are cancelled, the line predictor is updated using the branch prediction, and an address corresponding to the branch prediction is fetched

1. A microprocessor comprising:

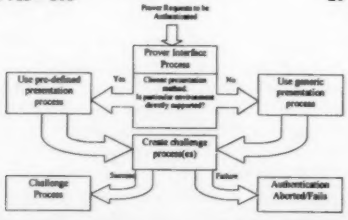
an instruction cache coupled to receive a first fetch address corresponding to two or more instructions terminated by a branch instruction, wherein the first fetch address locates an initial one of the two or more instructions in memory, and wherein the instruction cache is configured to store a plurality of instructions; and

a branch prediction unit coupled to receive the first fetch address, the branch prediction unit comprising a storage storing branch prediction information corresponding only to branch instructions, wherein the storage is configured to output first branch prediction information in response to the first fetch address, and wherein the branch prediction unit is configured to generate a first branch prediction for the branch instruction terminating the two or more instructions located by the first fetch address responsive to the first branch prediction information, wherein the brancih prediction unit further comprises logic coupled to receive the first branch prediction and a second branch prediction corresponding to the first fetch address, and wherein the logic is configured to signal that the two or more instructions are to be cancelled if the first branch prediction disagrees with the second branch prediction.

US 6,332,192 B1
GENERALIZED USER IDENTIFICATION AND AUTHENTICATION SYSTEM

Marc D. Boroditsky, Del Mar, Calif., and Marc B. Manza, Lindenhurst, N.Y., assignors to Passlogix, Inc., New York, N.Y.

Provisional application No. 60/046,289, filed on May 13, 1997. This application May 12, 1998, Appl. No. 76,375.
Int. Cl. G06F *1/24*
U.S. Cl. 713—168 **20 Claims**



1. A method for providing a user access to a secure application, comprising the steps of:

a) storing in an encrypted form authentication information necessary to satisfy the secure application's authentication requirements;

b) providing an authentication request to the user for access to the secure application, the authentication request comprising displaying to the user at least one symbol;

c) receiving user manipulations of at least a portion of the displayed symbol in response to the authentication request;

d) generating a codekey based on the user's manipulation of at least a portion of the displayed symbol;

e) decrypting the encrypted authentication information using the codekey to produce a result;

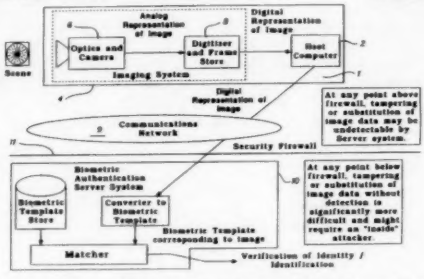
f) providing the result to the secure application; and

g) granting the user access to the secure application if the result supports the secure application's authentication requirements.

US 6,332,193 B1
METHOD AND APPARATUS FOR SECURELY TRANSMITTING AND AUTHENTICATING BIOMETRIC DATA OVER A NETWORK

Randal Glass, Hockessin, Del.; Marcos Salganicoff, and Ulf Cahn von Seelen, both of Philadelphia, Pa., assignors to Sensar, Inc., Moorestown, N.J.

Filed Jan. 18, 1999, Appl. No. 232,538
Int. Cl. H04K *1/00*
U.S. Cl. 713—170 **41 Claims**


Analog Representation of Image
Digital Representation of Image
Optics and Camera
Digitizer and Frame Store
Host Computer
Scene
Imaging System
Digital Representation of Image
At any point above firewall, tampering or substitution of image data may be undetectable by Server system.
Communications Network
Security Firewall
Biometric Authentication Server System
Biometric Template Store
Converter to Biometric Template
Biometric Template corresponding to image
Matcher
Verification of Identity / Identification
At any point below firewall, tampering or substitution of image data without detection is significantly more difficult and might require an "inside" attacker.

1. An apparatus for collecting and transmitting biometric data over a network, the apparatus comprised of:

a sensor having a unique identifier, the sensor collecting biometric data;

a token generator, coupled to the sensor, the token generator sending a token to the sensor;

a digitizer coupled to the sensor, the digitizer converting the biometric data collected by the sensor into a digital file;

a combiner coupled to the sensor, the combiner creating a data package comprising the digital file, the unique identifier and the token;

a code generator coupled to the data package, the code generator creating a signed data package; and

an output interface coupled to the combiner, the interface outputting the signed data package to a network.

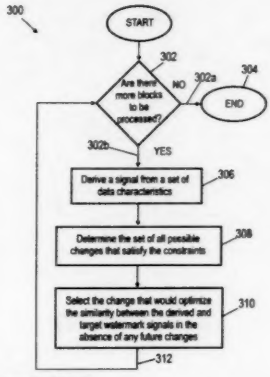
US 6,332,194 B1
METHOD FOR DATA PREPARATION AND WATERMARK INSERTION

Jeffrey A. Bloom, Plainsboro; Ingemar J. Cox, Lawrenceville, and Matthew L. Miller, Princeton, all of N.J., assignors to Signafy, Inc., Princeton, N.J.

Filed Jun. 5, 1998, Appl. No. 92,431
Int. Cl. H04L *9/00*
U.S. Cl. 713—176 **37 Claims**

1. A method for data preparation and watermark insertion, the data having sets of data characteristics, the method comprising the steps of:

providing data to be watermarked;



selecting a target signal;

extracting a derived signal from a set of data characteristics;

preparing the data at a first time to improve detectability of a subsequently inserted first watermark signal and/or reduce the complexity of the subsequent insertion of the first watermark signal by manipulating at least one set of the data characteristics such that the derived signal substantially matches the target signal; and

inserting the first watermark by manipulating the set of data characteristics at a second time subsequent to the first time.

US 6,332,195 B1

SECURE SERVER UTILIZING SEPARATE PROTOCOL STACKS

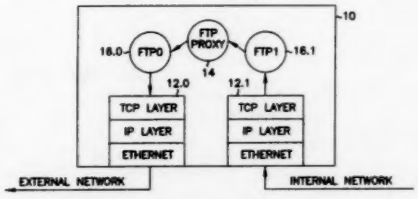
Michael W. Green, Shoreview, and Andrew W. Jensen, Oakdale, both of Minn., assignors to Secure Computing Corporation, Roseville, Minn.

Continuation of application No. 08/605,320, filed on Feb. 9, 1996, now Pat. No. 5,913,024. This application Feb. 22, 1999, Appl. No. 255,111.

This patent is subject to a terminal disclaimer.

Int. Cl. G06F *11/30;15/16*

U.S. Cl. 713—201 **11 Claims**



1. A secure commerce server system, comprising:

a plurality of regions or burbs, including an internal burb and an external burb, wherein processes bound to one burb cannot communicate directly to processes and data objects bound to other burbs, and wherein the internal burb includes a first protocol stack and the external burb includes a second protocol stack separate from the first protocol stack;

a commerce server, wherein processes and data objects associated with the commerce server are bound to the external burb;

an administration server, wherein processes and data objects associated with the administration server are bound to the internal burb; and

an assured pipeline connected between the external and internal burbs, wherein the assured pipeline controls transfer of information between the internal and external burbs such that a message from the commerce server to the administration server is routed up one or more layers of the second protocol stack and through the assured pipeline to the first protocol stack before being routed to the administration server.

US 6,332,196 B1

DISK STORAGE APPARATUS AND POWER SUPPLY CONTROL METHOD FOR THE SAME

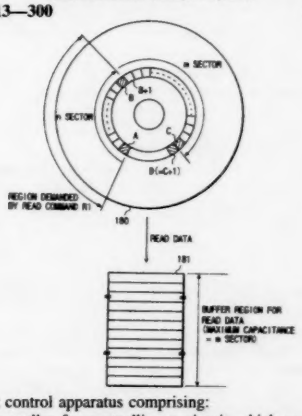
Makoto Kawasaki; Yasuhiko Ichikawa, and Shuichi Ishii, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Feb. 4, 1999, Appl. No. 244,421

Claims priority, application Japan, Apr. 30, 1998, 10-121140

Int. Cl. G06F *1/26;1/28;1/30*

U.S. Cl. 713—300 **16 Claims**



1. A disk control apparatus comprising:

a disk controller for controlling a circuit which controls read operation for reading data from a disk to a host; and

a CPU for controlling the circuit and the disk controller,

wherein the disk controller comprises:

a buffer memory for storing data being transferred between the host and the disk controller; and

a notification means for notifying the CPU that a first state in which an all buffer region of the buffer memory is stored with data to be transferred to the host transits to a second state in which a predetermined space occurs in the buffer region of the buffer memory by transferring data to the host,

and the CPU comprises a main control means for stopping power supply to the circuit during the first state and for supplying power to the circuit in response to a notification from the notification means.

US 6,332,197 B1

SYSTEM FOR UPDATING DATA IN A MULTI-ADAPTOR ENVIRONMENT

Divyesh Jadav, Campbell; Deepak R. Kenchammana-Hosekote, Sunnyvale, and Jaishankar Moothedath Menon, San Jose, all of Calif., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 4, 1998, Appl. No. 128,574

Int. Cl. G06F *11/00*

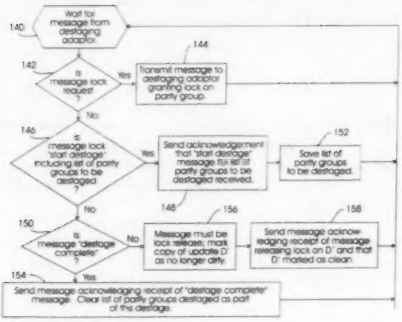
U.S. Cl. 714—6 **26 Claims**

1. A method for updating a data block in a storage device, comprising the steps of:

receiving an update to a data block in a storage device at a first processing unit;

sending, with the first processing unit, a first message including the update and information indicating data blocks that were recently updated to a second processing unit;

storing, with the second processing unit, the update in a second storage area;


Wait for message from destaging adaptor
140
142
Is message lock request?
Yes
144
Transmit message to destaging adaptor granting lock on partly group.
No
146
Is message lock 'start destage' including list of partly groups to be destaged?
Yes
Send acknowledgement that 'start destage' message has list of partly groups to be destaged received.
152
Save list of partly groups to be destaged.
No
148
156
158
150
Is message 'destage complete'?
No
Message must be lock release; mark copy of update D' as no longer dirty.
Send message acknowledging receipt of message releasing lock on D' and that D' marked as clean.
Yes
154
Send message acknowledging receipt of 'destage complete' message. Clear list of partly groups destaged as part of the destage.

sending a second message with the second processing unit to the first processing unit after receiving the first message;

storing, with the first processing unit, the update in a first storage area, wherein the first and second storage areas maintain a copy of the update to the data block; and

transferring, with the first processing unit, the update from the first storage area to the data block in the storage device.

US 6,332,198 B1

NETWORK DEVICE FOR SUPPORTING MULTIPLE REDUNDANCY SCHEMES

Corey Simons, Waltham, Mass.; Terrence S. Pearson, Hollis, N.H.; Chris R. Noel, Acton, Mass.; Joseph D. Kidder, Arlington, Mass.; Brian Branscomb, Hopkinton, Mass.; Nicholas A. Langrind, Carlisle, Mass.; Daniel J. Sullivan, Hopkinton, Mass., and Barbara A. Fox, Arlington, Mass., assignors to Equipe Communications Corporation, Acton, Mass.

Continuation-in-part of application No. 09/588,398, filed on Jun. 6, 2000, which is a continuation-in-part of application No. 09/574,341, filed on May 20, 2000, and a continuation-in-part of application No. 09/574,343, filed on May 20, 2000. This application Jun. 9, 2000, Appl. No. 591,193.

Int. Cl. G06F *13/00*

U.S. Cl. 714—6 **45 Claims**

1. A network device, comprising:

a plurality of universal port cards employing a first redundancy scheme;

a plurality of forwarding cards employing a second redundancy scheme; and

a cross-connection card coupled to the plurality of universal port cards and the plurality of forwarding cards.

US 6,332,199 B1

RESTORING CHECKPOINTED PROCESSES INCLUDING ADJUSTING ENVIRONMENT VARIABLES OF THE PROCESSES

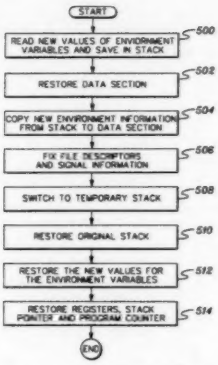
Kalman Zvi Meth, Netanya, and Adnan M. Agbaria, Musmus, both of Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1998, Appl. No. 182,357

Int. Cl. G06F *11/00*

U.S. Cl. 714—13 **23 Claims**

1. A method of restoring checkpointed processes, said method comprising:



restarting a process on a computing unit from a checkpoint taken of said process;

restoring one or more environment variables of said process using data obtained from said checkpoint, wherein one or more restored environment variables are provided;

changing a value of one restored environment variable of said one or more restored environment variables to a new value; and

executing said process using the new value of said one restored environment variable.

US 6,332,200 B1

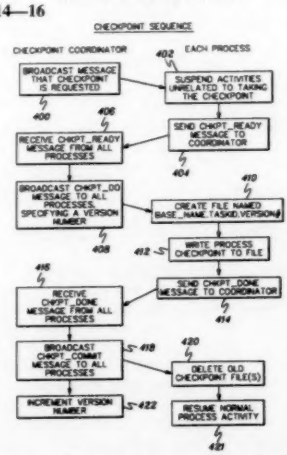
CAPTURING AND IDENTIFYING A COMPLETE AND CONSISTENT SET OF CHECKPOINT FILES

Kalman Zvi Meth, Netanya, and Adnan M. Agbaria, Musmus, both of Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1998, Appl. No. 182,175

Int. Cl. G06F *11/00;11/36*

U.S. Cl. 714—16 **42 Claims**



1. A method of identifying a complete and consistent set of checkpoint files for a parallel program, said method comprising:

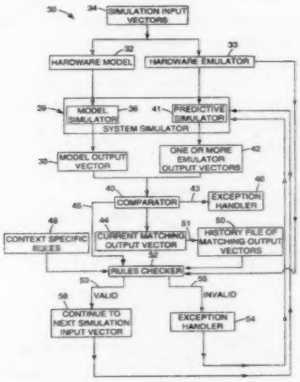
determining, by a plurality of processes of said parallel program, a plurality of version numbers representative of a plurality of current valid checkpoint files corresponding to said plurality of processes; and

selecting from said plurality of version numbers a selected version number representative of a consistent set of checkpoint files for said parallel program.

US 6,332,201 B1
TEST RESULTS CHECKING VIA PREDICTIVE-REACTIVE EMULATION

Richard Chin, Los Altos, and Raghu Subramanian, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 23, 1999, Appl. No. 273,582
Int. Cl. G06F *11/00*
U.S. Cl. 714—28 **23 Claims**



1. A functional testing system for verifying the behavior of a digital system, the system comprising:

a plurality of input vectors;

a hardware model representing a relatively low-level software characterization of the digital system;

a hardware emulator representing a relatively high-level software characterization of the digital system, wherein the hardware emulator is capable of storing internal model state information;

a system simulator for applying the plurality of input vectors to the hardware model and the hardware emulator, wherein each input vector applied to the hardware model produces a corresponding model output vector and wherein each input vector applied to the hardware emulator produces one or more corresponding emulator output vectors;

a comparator comparing each of the one or more emulator output vectors to the model output vector, activating a match signal if the model output vector matches one of the one or more emulator output vectors, and providing a current matching output vector;

a history file storing matching output vectors from the comparator;

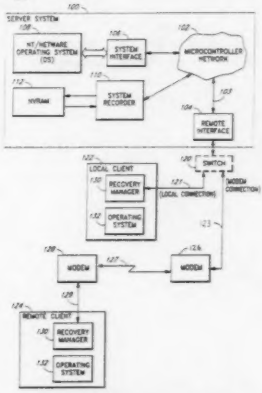
a set of context specific rules defining a valid behavior for the list of matching output vectors stored in the history file; and

a rules checker determining whether the current matching output vector is valid based on the history file, the internal model state information from the hardware emulator, the set of context specific rules, and the current matching output vector.

US 6,332,202 B1
METHOD OF REMOTE ACCESS AND CONTROL OF ENVIRONMENTAL CONDITIONS

Tahir Q. Sheikh, Fremont; Karl S. Johnson, Palo Alto, and Ken Nguyen, San Jose, all of Calif., assignors to Micron Technology, Inc., Boise, Id.

Division of application No. 08/942,215, filed on Oct. 1, 1997,
Provisional application No. 60/046,397, filed on May 13, 1997,
Provisional application No. 60/047,016, filed on May 13, 1997,
Provisional application No. 60/046,416, filed on May 13, 1997.
This application Oct. 11, 2000, Appl. No. 686,254.
Int. Cl. G06F *11/10*
U.S. Cl. 714—39 **7 Claims**



1. A method of external management of the environmental conditions of a computer, the method comprising the acts of:

connecting a remote interface to a first computer and a second computer;

providing an environmental management command at the second computer directed to the first computer;

encapsulating the command in a communications protocol;

transmitting the encapsulated command to the remote interface;

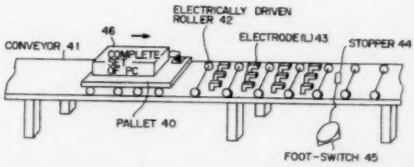
communicating the command received by the remote interface to the first computer, and

performing the command on the first computer.

US 6,332,203 B1
TESTING APPARATUS AND METHOD FOR PREVENTING A DISK UNIT FROM BEING DAMAGED

Hitoshi Tanaka; Masao Kobori, and Ikuko Tachibana, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 18, 1997, Appl. No. 971,920
Claims priority, application Japan, Apr. 28, 1997, 9-110593
Int. Cl. G06F *11/00*
U.S. Cl. 714—42 **22 Claims**



1. A testing apparatus for testing an information processing device having a disk unit at a plurality of testing positions, comprising:

a testing device performing an operation testing process of said information processing device, and

a processing device executing a program for the operation testing process to set a head of said disk unit to a specific safe position, where data damage is prevented during transportation of the disk unit, automatically according to a programmed timing at a current testing position when said disk unit is to be transported from the current testing position to a next testing position.

US 6,332,204 B1

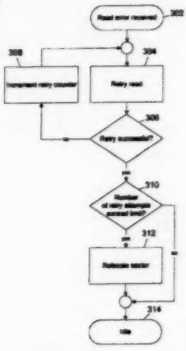
RECOVERING AND RELOCATING UNRELIABLE DISK SECTORS WHEN ENCOUNTERING DISK DRIVE READ ERRORS

Barry Lowell Russell, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1999, Appl. No. 283,364

Int. Cl. G01R *31/28;* **G06F** *11/00*

U.S. Cl. 714—710 **18 Claims**



1. A method of preserving data in unreliable disk sectors, comprising:

responsive to at least one failed attempt to read a data sector, determining whether the data sector is unreliable, by determining a number of read attempts required to successfully read the data sector; and

responsive to determining that the data sector is unreliable, relocating the data sector to a replacement sector.

US 6,332,205 B1

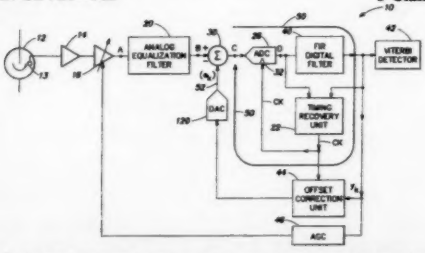
DATA RECOVERY SYSTEM HAVING OFFSET COMPENSATION

Thomas Conway, Boulder, Colo., assignor to STMicroelectronics N.V., Netherlands

Filed Dec. 8, 1998, Appl. No. 207,245

Int. Cl. G06F *11/00;11/30;* **G11B** *5/09;15/04*

U.S. Cl. 714—746 **3 Claims**



1. A data recovery system, to recover data, represented by a sequence of data pulses, having a d.c. offset comprising a sequence of preamble pulses fed to the system during a preamble acquisition mode and a sequence of data pulses fed to the system during a subsequent data recovery mode, such system comprising:

a negative feedback loop, having a differencing network fed by the data pulses and a feedback signal representative of the DC offset component, such differencing network removing the DC offset component in response to only actual values of data pulses fed thereto during the preamble acquisition mode and in response to both actual data pulses and estimated values of such data pulses fed thereto during the data recovery mode.

US 6,332,206 B1

HIGH-SPEED ERROR CORRECTING APPARATUS WITH EFFICIENT DATA TRANSFER

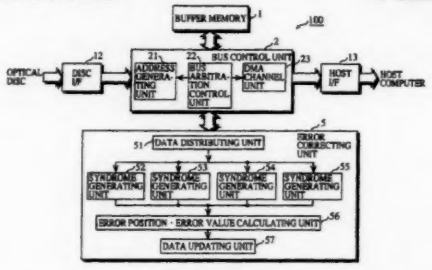
Fumio Nakatsuji, Kyoto, and Yuichi Hashimoto, Osaka, both of Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan

Filed Feb. 24, 1999, Appl. No. 256,740

Claims priority, application Japan, Feb. 25, 1998, 10-043219

Int. Cl. H03M *13/00;* **G11C** *29/00*

U.S. Cl. 714—755 **40 Claims**



1. An error correcting apparatus that repeatedly performs calculations that are required for error correction on code sequences in a row direction and a column direction in block code of R rows and L columns, the error correcting apparatus comprising:

storing means for storing the block code;

calculating means for performing calculations for correcting errors in the block code in units of one of (a) one row and (b) one column; and

transfer means, including

a row direction transferring unit for repeatedly reading code sequences on R1 (where R1 is an integer such that $2 \leqq R1 < R$) rows in the block code from the storing means and transferring the read code sequences to the calculating means until all R rows have been read and transferred,

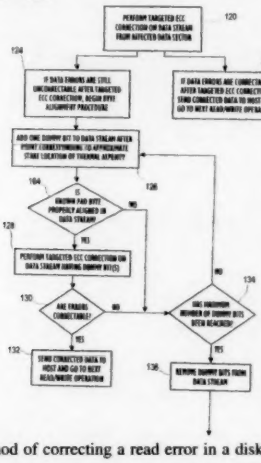
the row direction transferring unit transferring the code sequences on the R1 rows from the storing means to the calculating means by repeatedly reading and transferring sections of L1 consecutive codes (where L1 is an integer such that $2 \leqq L1 < L$) on the R1 rows in order, shifting a read position by L1 codes after reading L1 consecutive codes on each of the R1 rows,

wherein when codes have been transferred by the row direction transferring unit, the calculating means performs the calculations for the code sequences on the R1 rows in parallel, treating the received codes as L1-code-wide sections of the code sequences on different rows in the R1 rows.

US 6,332,207 B1
METHOD OF CORRECTING A READ ERROR IN A DISK DRIVE

Bobby Ray Southerland; Jin-Hong Hsueh; Lace J. Herman, and John C. Purkett, all of Longmont, Colo., assignors to Maxtor Corporation, Longmont, Colo.

Division of application No. 09/382,715, filed on Aug. 24, 1999, now Pat. No. 6,147,827, which is a continuation of application No. 08/987,150, filed on Dec. 8, 1997, now Pat. No. 6,084,734.
This application Apr. 28, 2000, Appl. No. 561,586.
Int. Cl. G11C *29/00;* **H03M** *13/00*
U.S. Cl. 714—763 **20 Claims**



1. A method of correcting a read error in a disk drive, comprising:

reading a disk surface to provide a data signal that includes data bits, error correction code (ECC) bits and ECC pad bits;

detecting an error in the data signal;

determining an approximate location of the error;

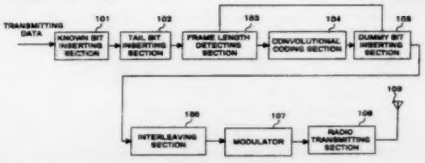
testing the data signal by (i) determining whether the pad bits are correct, (ii) performing an error correction procedure on the data bits using the ECC bits and the approximate location of the error if the pad bits are correct, and (iii) skipping the error correction procedure if the pad bits are not correct, wherein the test is successful if the pad bits are correct and the error correction procedure is successful, and the test is not successful if the pad bits are not correct or the error correction procedure is not successful; and

shifting the data signal and then repeating the test if the test was not successful.

US 6,332,208 B1
DATA TRANSMITTING APPARATUS AND DATA TRANSMITTING METHOD

Junichi Aizawa, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 8, 1998, Appl. No. 207,276
Claims priority, application Japan, Dec. 12, 1997, 9-362740
Int. Cl. H03M *13/03;* **H04L** *23/02*
U.S. Cl. 714—786 **10 Claims**



1. A data transmitting apparatus comprising:

a known bit inserting system that inserts known bit data having a predetermined length at a predetermined position of transmitting data;

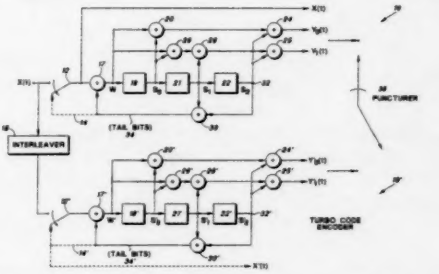
a tail bit inserting system that inserts tail bit data to said transmitting data having said known bit data inserted so as to generate frame data; and

a coding system that convolutionally codes said frame data.

US 6,332,209 B1
METHOD FOR A GENERAL TURBO CODE TRELLIS TERMINATION

Mustafa Eroz, Germantown, and A. Roger Hammons, Jr., North Potomac, both of Md., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Provisional application No. 60/098,111, filed on Aug. 27, 1998.
This application Aug. 20, 1999, Appl. No. 378,625.
Int. Cl. H03M *13/23;13/29*
U.S. Cl. 714—790 **7 Claims**



1. A method of terminating two or more constituent encoders of a turbo encoder employing a turbo code, the method comprising the steps of:

generating tail input bits at each of two or more constituent encoders, including the step of:

deriving the tail input bits from each of the two or more constituent encoders separately for each constituent encoder from a contents of shift registers within each of the two or more constituent encoders, after an encoding of information bits by the two or more constituent encoders; and

puncturing one or more tail output bits such that 1/R tail output bits are transmitted for each of a plurality of trellis branches, wherein R is a turbo code rate employed by the turbo encoder during an information bit transmission.

US 6,332,210 B1
METHOD OF CREATING AND USING SYSTEM-INDEPENDENT SOFTWARE COMPONENTS

Shan Barkataki, West Hills; Patricia J. Dousette, North Hills; Dale F. Frederick, Northridge; Stuart H. Harte, Westlake Village, and Gary R. Johnson, Newbury Park, all of Calif., assignors to Litton Systems, Inc., Agoura Hills, Calif.

Filed Dec. 22, 1998, Appl. No. 219,571
Int. Cl. G06F *9/45*
U.S. Cl. 717—1 **24 Claims**

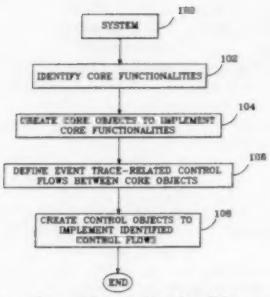
1. A method of creating system-independent software components, comprising the steps of:

identifying core functionalities required by a software system;

creating system-independent core objects which implement said core functionalities;

defining event trace-related control flows between said core objects based on said software system; and

creating control objects which invoke operation of said core objects in accordance with said event trace-related control flows;

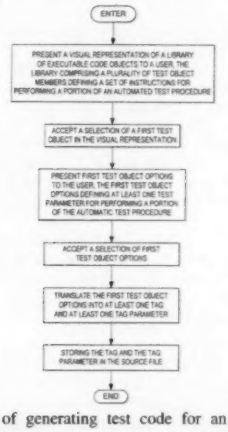


whereby separating said core functionalities and said event trace-related control flows into said core objects and said control objects, respectively, enables said core objects to be re-used in other software systems having different event trace-related control flows.

US 6,332,211 B1
SYSTEM AND METHOD FOR DEVELOPING TEST CASES USING A TEST OBJECT LIBRARY

Thomas J. Pavela, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1998, Appl. No. 221,389
Int. Cl. G06F *9/445*
U.S. Cl. 717—2 **18 Claims**


ENTER
PRESENT A VISUAL REPRESENTATION OF A LIBRARY OF EXECUTABLE CODE OBJECTS TO A USER, THE LIBRARY COMPRISING A PLURALITY OF TEST OBJECT MEMBERS DEFINING A SET OF INSTRUCTIONS FOR PERFORMING A PORTION OF AN AUTOMATED TEST PROCEDURE
ACCEPT A SELECTION OF A FIRST TEST OBJECT IN THE VISUAL REPRESENTATION
PRESENT FIRST TEST OBJECT OPTIONS TO THE USER, THE FIRST TEST OBJECT OPTIONS DEFINING AT LEAST ONE TEST PARAMETER FOR PERFORMING A PORTION OF THE AUTOMATIC TEST PROCEDURE
ACCEPT A SELECTION OF FIRST TEST OBJECT OPTIONS
TRANSLATE THE FIRST TEST OBJECT OPTIONS INTO AT LEAST ONE TAG AND AT LEAST ONE TAG PARAMETER
STORING THE TAG AND THE TAG PARAMETER IN THE SOURCE FILE
END

1. A method of generating test code for an automated test procedure applyable to a system comprising a plurality of interconnected elements, the method comprising the steps of:

defining a source file having a plurality of tags, each tag associated with a member of a library of executable code objects defining a set of instructions for performing a portion of the automatic test procedure wherein the library of executable code objects comprises a first executable code object defining a set of instructions for performing method steps comprising the steps of issuing a command to a commanded system element and intercepting a message responsive to the command from the commanded element;

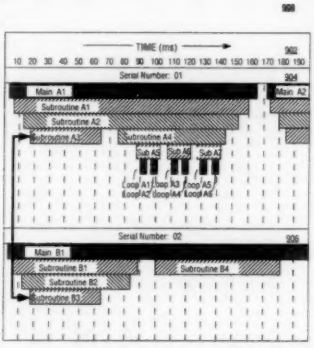
generating a test plan in a conversational language from the source file; and

generating the test code for the automated test procedure from the source file.

US 6,332,212 B1
CAPTURING AND DISPLAYING COMPUTER PROGRAM EXECUTION TIMING

Donald V. Organ, Saratoga; Mark E. Deome, San Jose; Rajaneekara Techasaratoole, San Jose, and Val N. Greene, San Jose, all of Calif., assignors to LTX Corporation, Westwood, Mass.

Filed Oct. 2, 1997, Appl. No. 944,935
Int. Cl. G06F *9/45*
U.S. Cl. 717—4 **38 Claims**



1. A method of displaying an execution sequence of a first computer program comprising a plurality of subprograms, said method comprising:

measuring an execution time duration of the plurality of subprograms;

representing the execution time duration of the plurality of subprograms as graphic objects, wherein each of the plurality of subprograms has a corresponding graphic object; and

displaying the graphic objects such that a first characteristic of said graphic objects, displayed along a first axis, represents the execution time duration, and a second characteristic of said graphic objects, displayed along a second axis, represents a hierarchical relationship among the plurality of subprograms, such that higher levels in the hierarchical relationship represent higher levels of functionality, and each lower level is directly under a single graphic object at an immediately higher level.

US 6,332,213 B1
IR CODE INSTRUMENTATION

Franklin C. Grossman, Hollis; David C. Angel, Hudson, and David A. Seidel, Peterborough, all of N.H., assignors to Compuware Corporation, Farmington Hills, Mich.

Continuation of application No. 08/916,125, filed on Aug. 21, 1997, now Pat. No. 5,987,249, Provisional application No. 60/024,624, filed on Aug. 27, 1996, Provisional application No. 60/036,250, filed on Jan. 24, 1997. This application Sep. 15, 1999, Appl. No. 396,852.
This patent is subject to a terminal disclaimer.
Int. Cl. G06F *9/44;11/00*
U.S. Cl. 717—4 **39 Claims**

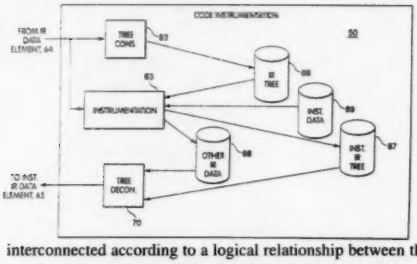
1. A method of instrumenting a computer program, comprising:

(a) examining an initial intermediate representation of the program, wherein the initial intermediate representation is independent of source language for the program;

(b) selecting portions of the initial intermediate representation for instrumentation;

(c) instrumenting the portions; and

(d) creating an intermediate representation tree of nodes corresponding to intermediate representation operations and operands of the initial intermediate representation, the nodes being



interconnected according to a logical relationship between the operators and the operands, wherein instrumenting the portions includes modifying the intermediate representation tree;

wherein said creating an intermediate represenation further imcluding:

interconnecting the nodes so that children nodes of an operator are operands thereof; and

placing the children nodes on a local stack and then popping the children nodes off the local stack to connect the children nodes to parents thereof.

US 6,332,214 B1

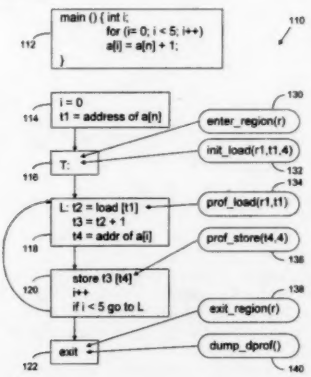
ACCURATE INVALIDATION PROFILING FOR COST EFFECTIVE DATA SPECULATION

Youfeng Wu, Palo Alto, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 8, 1998, Appl. No. 75,147

Int. Cl. G06F *9/445*

U.S. Cl. 717—5 **35 Claims**



1. A computer implemented method used in compiling a program, comprising:

selecting conflict regions of the program; and

performing invalidation profiling of load instructions at least some of which are data dependent load instructions with respect to at least some of the conflict regions to determine invalidation rates of at least some of the data dependent load instructions, wherein the invalidation profiling involves using a data speculative load instruction at a target location and a data speculation verify and recovery instruction at an original load instruction location.

US 6,332,215 B1

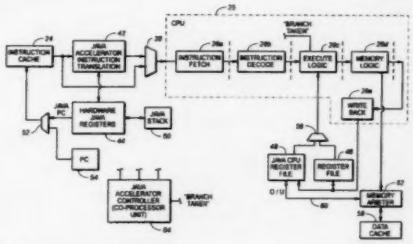
JAVA VIRTUAL MACHINE HARDWARE FOR RISC AND CISC PROCESSORS

Mukesh K. Patel, Fremont; Jay Kamdar, Cupertino, and V. R. Ranganath, Milpitas, all of Calif., assignors to Nazomi Communications, Inc., Santa Clara, Calif.

Filed Dec. 8, 1998, Appl. No. 208,741

Int. Cl. G06F *9/45*

U.S. Cl. 717—5 **70 Claims**



1. A system comprising:

a central processing unit having a register file, the central processing unit adapted to execute register-based instructions; and

a hardware unit associated with the central processing unit, the hardware unit adapted to convert stack-based instructions into register-based instructions, wherein a portion of the operand stack is stored in the register file of the central processing unit and wherein the hardware unit is adapted to produce at least one of overflow or underflow indications for the portion of the operand stack stored in the register file, wherein the hardware unit is adapted to swap parts of the operand stack in and out of the register file from a memory, the system including an indication of the depth of the portion of operand stack, wherein a overflow or underflow produces an operand transfer between the register file in the central processing unit and memory.

US 6,332,216 B1

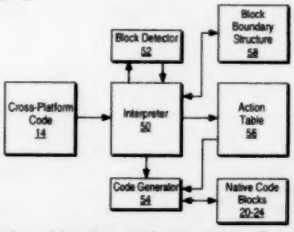
HYBRID JUST-IN-TIME COMPILER THAT CONSUMES MINIMAL RESOURCE

Geetha Manjunath, Bangalore, India, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 9, 1999, Appl. No. 264,755

Int. Cl. G06F *9/45*

U.S. Cl. 717—5 **18 Claims**



1. A virtual machine that enables execution of a set of cross-platform code on a hardware platform, comprising:

block detector that identifies a basic block contained in the cross-platform code which is to be compiled into a native code block for the hardware platform;

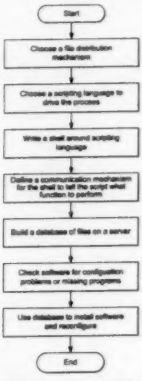
code generator that compiles the basic block into the native code block in response to the identification from the block detector;

interpreter that executes the cross-platform code by executing the native code block in place of the basic block and by interpreting a remaining portion of the cross-platform code not identified by the block detector.

US 6,332,217 B1
SOFTWARE INVENTORY CONTROL SYSTEM

Lawrence C. Hastings, Mountain View, Calif., assignor to Hearme, Mountain View, Calif.

Provisional application No. 60/046,153, filed on May 9, 1997.
This application May 8, 1998, Appl. No. 75,310.
Int. Cl. G06F *9/445*
U.S. Cl. 717—11 **6 Claims**


Start
Choose a file distribution mechanism
Choose a scripting language to drive the process
Write a shell around scripting language
Define a communication mechanism for the shell to tell the script what function to perform
Build a database of files on a server
Check software for configuration problems or missing programs
Use database to install software and reconfigure
End

1. A method for checking system configuratiotis on a terminal for current updated software, the method comprising:

implementing a shell around a scripting language to provide a system configuration script;

accessing the system configuration script on the terminal from an other computer coupled to the terminal via a network;

signaling the system configuration script from the other computer to examine whether a system configuration in the plurality of system configurations contains versions of software that require updating; and

reconfiguring the system configuration with updated software if the system configuration contains versions of software that require updating.

US 6,332,218 B1
SYSTEM AND METHOD FOR AUTOMATICALLY INSTANTIATING CLASSES IN A VIRTUAL MACHINE

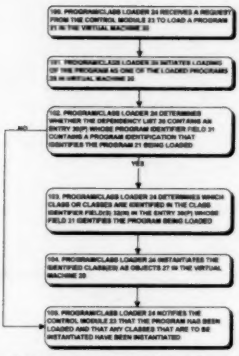
William D. Walker, Nashua, N.H., and Peter A. Korn, Oakland, Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jun. 30, 1998, Appl. No. 107,015
Int. Cl. G06F *9/445*
U.S. Cl. 717—11 **15 Claims**

1. An arrangement for loading a program in a virtual machine in a digital computer system comprising:

a dependency list that identifies at least one class that is associated with said program but is not a part of said program; and

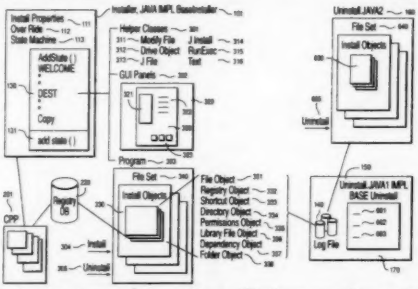
a program/class loader adapted to load said program in said virtual machine, said program/class loader further being adapted to determine whether the dependency list identifies a class that is associated with said program, but not part of said program and, if so, to instantiate the class in the virtual machine so that an object instantiated from the class will be available in the virtual machine together with the program at runtime.



US 6,332,219 B1
CROSS-PLATFORM PROGRAM, SYSTEM, AND METHOD HAVING A GLOBAL REGISTRY OBJECT FOR MAPPING REGISTRY FUNCTIONS IN A WINDOWS OPERATING SYSTEM ENVIRONMENT

Bryce Allen Curtis, Round Rock, and Jimmy Ming-Der Hsu, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1999, Appl. No. 280,349
Int. Cl. G06F *9/445*
U.S. Cl. 717—11 **6 Claims**



3. A computer system, running a Windows operating system, comprising:

a global registry object having fields keyname, key root, and key value;

means for mapping the key root field to a root in a registry of a Windows operating system;

means for mapping the keyname field to a key and at least one subkey if at least one subkey is present in the Windows registry;

means for mapping the key value field to a value in the windows registry; and

means for manipulating the Windows registry through methods of the global registry object.

US D452,059 S

PAIR OF MEDIUM-HEELED OPEN-BACK SHOES

Marc Jacobs, Paris, France, assignor to Louis Vuitton Mallettier, S.A., Paris, France

Filed Jan. 3, 2001, Appl. No. 134,881

Claims priority, application France, Mar. 7, 2000, 00 3859

Term of patent 14 years

LOC (7) Cl. 02 - *04*

U.S. Cl. D2—926

US D452,060 S

PORTION OF A SHOE OUTSOLE

Andrew Estey, West Linn, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jul. 31, 2001, Appl. No. 145,794

Term of patent 14 years

LOC (7) Cl. 02 - *04*

U.S. Cl. D2—955

US D452,061 S

PORTION OF A SHOE OUTSOLE

Steven F. Smith, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jul. 31, 2001, Appl. No. 145,784

Term of patent 14 years

LOC (7) Cl. 02 - *04*

U.S. Cl. D2—957

US D452,062 S

REMOVABLE TREAD DEVICE FOR FOOTWEAR

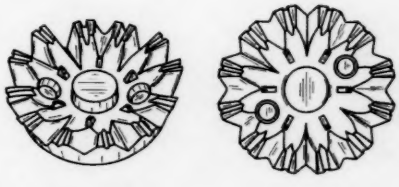
Armand J. Savoie, Gardner, Mass., assignor to MacNeill Engineering Company, Inc., Marlborough, Mass.

Filed Jun. 28, 2000, Appl. No. 125,668

Term of patent 14 years

LOC (7) Cl. 02 - *04*

U.S. Cl. D2—962



US D452,063 S

REMOVABLE TREAD DEVICE FOR FOOTWEAR

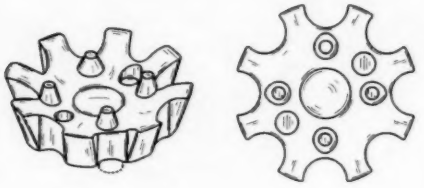
Armand J. Savoie, Gardner, Mass., assignor to MacNeill Engineering Company, Inc., Marlborough, Mass.

Filed Jun. 28, 2000, Appl. No. 125,671

Term of patent 14 years

LOC (7) Cl. 02 - *04*

U.S. Cl. D2—962



US D452,064 S

REMOVABLE TREAD DEVICE FOR FOOTWEAR

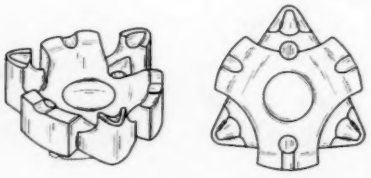
Armand J. Savoie, Gardner, Mass., assignor to MacNeill Engineering Company, Inc., Marlborough, Mass.

Filed Jun. 28, 2000, Appl. No. 125,678

Term of patent 14 years

LOC (7) Cl. 02 - *04*

U.S. Cl. D2—962



US D452,065 S

REMOVABLE CLEAT

Armand J. Savoie, Gardner, Mass., assignor to MacNeill Engineering Company, Inc., Marlborough, Mass.

Filed May 3, 2001, Appl. No. 141,328

Term of patent 14 years

LOC (7) Cl. 02 - *04*

U.S. Cl. D2—962

US D452,066 S

SANDAL UPPER

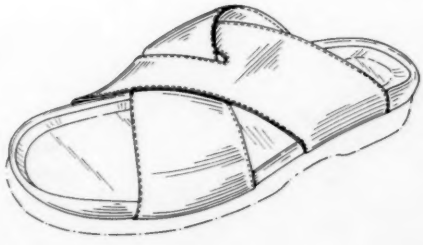
Norman Dean, Pleasant Valley, N.Y., assignor to Footstar Corporation, Mahwah, N.J.

Filed Nov. 29, 1999, Appl. No. 114,666

Term of patent 14 years

LOC (7) Cl. 02 - *04*

U.S. Cl. D2—969



US D452,067 S

FOOTWEAR UPPER

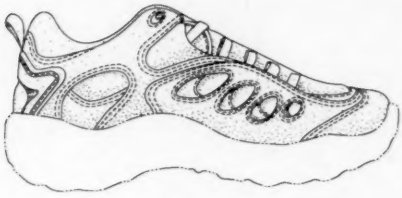
Clark A. Matis, Charlotte, Vt., and Bruce Rogers, Ketchum, Id., assignors to Wolverine World Wide, Inc., Rockford, Mich.

Filed Nov. 30, 2000, Appl. No. 133,440

Term of patent 14 years

LOC (7) Cl. 02 - *04*

U.S. Cl. D2—969



US D452,068 S

FOOTWEAR UPPER PORTION

Martin Laberge, Annecy, and Thierry Barret, Choisy, both of France, assignors to Salomon S.A., Metz-Tessy, France

Filed Mar. 16, 2001, Appl. No. 138,527

Term of patent 14 years

LOC (7) Cl. 02 - *99*

U.S. Cl. D2—972

US D452,069 S

SIDE ELEMENT OF A SHOE UPPER

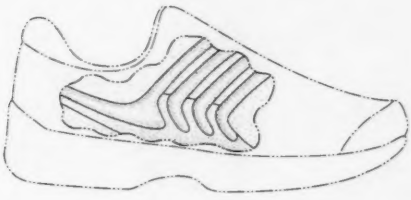
Linda Allen, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jun. 15, 2001, Appl. No. 143,640

Term of patent 14 years

LOC (7) Cl. 02 - *99*

U.S. Cl. D2—972



US D452,070 S

PORTION OF A SHOE UPPER

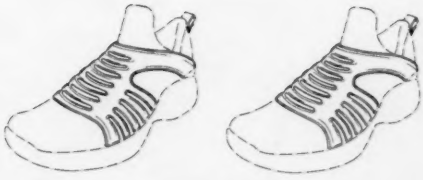
Matthew Jason Holmes, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jul. 31, 2001, Appl. No. 145,795

Term of patent 14 years

LOC (7) Cl. 02 - *99*

U.S. Cl. D2—972

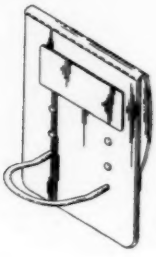


US D452,071 S

WORKBELT HAMMER HOLDER

Gregory Scott Snider, Bel Air, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Aug. 2, 2000, Appl. No. 127,250
Term of patent 14 years
LOC (7) Cl. 03 - *01*
U.S. Cl. D3—228



US D452,072 S

HANDBAG

Isabelle Guyon, Paris, France, assignor to S.A. Jean Cassegrain, Paris, France

Filed Mar. 27, 2001, Appl. No. 139,219
Term of patent 14 years
LOC (7) Cl. 03 - *01*
U.S. Cl. D3—238

US D452,073 S

HANDBAG

Philippe Cassegrain, Paris, France, assignor to S. A. Jean Cassegrain, Paris, France

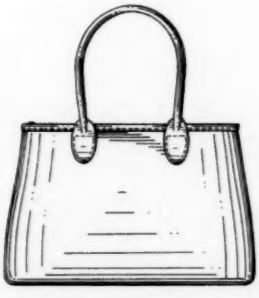
Filed Mar. 27, 2001, Appl. No. 139,220
Term of patent 14 years
LOC (7) Cl. 03 - *01*
U.S. Cl. D3—243

US D452,074 S

HANDBAG

Isabelle Guyon, Paris, France, assignor to S.A. Jean Cassegrain, Paris, France

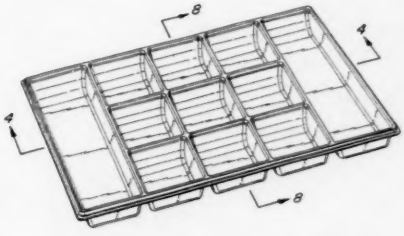
Filed Mar. 27, 2001, Appl. No. 139,273
Term of patent 14 years
LOC (7) Cl. 03 - *01*
U.S. Cl. D3—246



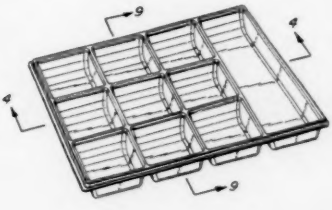
US D452,075 S
CONTAINER
Melvin S. Mogil, Toronto, Canada, assignor to California Innovations Inc., Willowdale, Canada
Division of application No. 29/105,733, filed on Jun. 1, 1999.
This application Jul. 26, 2000, Appl. No. 126,817.
Term of patent 14 years
LOC (7) Cl. 03 - *01*
U.S. Cl. D3—301

US D452,076 S
BASKET WITH TUBULAR HANDLE
Russell Benton Snell, Bentleyville, Ohio, assignor to InterDesign, Inc., Solon, Ohio
Filed Mar. 30, 2001, Appl. No. 139,483
Term of patent 14 years
LOC (7) Cl. 03 - *01*
U.S. Cl. D3—309

US D452,077 S
ELEVEN COMPARTMENT TRAY
Tyler J. Dembicks, Raleigh, N.C., assignor to The Andrews Company, Boca Raton, Fla.
Filed Aug. 8, 2000, Appl. No. 127,521
Term of patent 14 years
LOC (7) Cl. 03 - *01*
U.S. Cl. D3—313

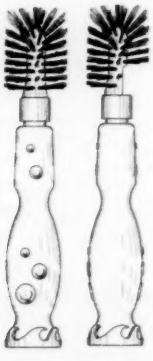


US D452,078 S
TEN COMPARTMENT TRAY
Tyler J. Dembicks, Raleigh, N.C., assignor to Andrews Toolworks, Inc., Raleigh, N.C.
Filed Aug. 8, 2000, Appl. No. 127,522
This patent is subject to a terminal disclaimer.
Term of patent 14 years
LOC (7) Cl. 03 - *01*
U.S. Cl. D3—313

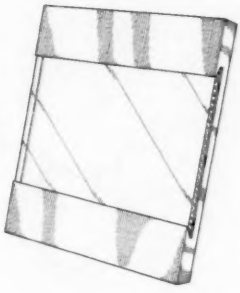


US D452,079 S
TOOTHBRUSH
Han Guo Ping, Hangji, China, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Jan. 23, 2001, Appl. No. 135,986
Term of patent 14 years
LOC (7) Cl. 04 - *02*
U.S. Cl. D4—104

US D452,080 S
BOTTLE BRUSH
Robert E. Petner, 68 Arrowhead Dr., Burlington, N.J. 08016
Filed Jun. 1, 2000, Appl. No. 124,455
Term of patent 14 years
LOC (7) Cl. 04 - *01*
U.S. Cl. D4—114

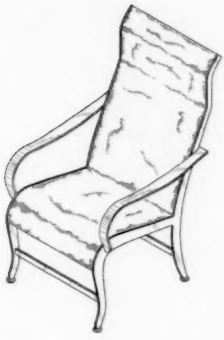


US D452,081 S
PICTURE FRAME
Paul Rowan, Toronto, Canada, assignor to Umbra, Inc., Buffalo, N.Y.
Filed Jan. 8, 2001, Appl. No. 135,217
Term of patent 14 years
LOC (7) Cl. 06 - *07*
U.S. Cl. D6—300



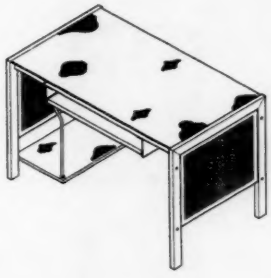
US D452,082 S
SLING BACK CHAIR
Robert A. Pluer, Nokomis, Fla., assignor to CFI Manufacturing, Inc., Sarasota, Fla.
Filed Mar. 10, 2000, Appl. No. 119,948
Term of patent 14 years
LOC (7) Cl. 06 - *01*
U.S. Cl. D6—375

US D452,083 S
SLING BACK CHAIR
Robert A. Pluer, Nokomis, Fla., assignor to CFI Manufacturing, Inc., Sarasota, Fla.
Filed Mar. 10, 2000, Appl. No. 119,949
Term of patent 14 years
LOC (7) Cl. 06 - *01*
U.S. Cl. D6—375

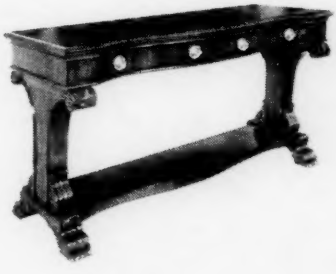


US D452,084 S
CHAIR
Timothy Michael O'Hare, Greensboro, and Shawn Christopher Stanton, High Point, both of N.C., assignors to Bernhardt, L.L.C., Lenoir, N.C.
Filed Apr. 3, 2001, Appl. No. 139,592
Term of patent 14 years
LOC (7) Cl. 06 - *01*
U.S. Cl. D6—379

US D452,085 S
OFFICE DESK
Chien-Kuo Chang, Fl. 10-2, No. 447, Sec. 3, Wen-Hsin Rd., Taichung, Taiwan
Filed Apr. 20, 2001, Appl. No. 140,528
Term of patent 14 years
LOC (7) Cl. 06 - *04*
U.S. Cl. D6—422



US D452,086 S
TABLE
Lawrence I. Vaaler, Lenoir, N.C., assignor to Bernhardt, L.L.C., Lenoir, N.C.
Filed Apr. 5, 2001, Appl. No. 139,798
Term of patent 14 years
LOC (7) Cl. 06 - *04*
U.S. Cl. D6—436



US D452,087 S
SEMANIER

Timothy Michael O'Hare, Greensboro, and Shawn Christopher Stanton, High Point, both of N.C., assignors to Bernhardt, L.L.C., Lenoir, N.C.

Filed Mar. 26, 2001, Appl. No. 139,168
Term of patent 14 years
LOC (7) Cl. 06 - *04*
U.S. Cl. D6—441

US D452,088 S
FURNITURE UNIT

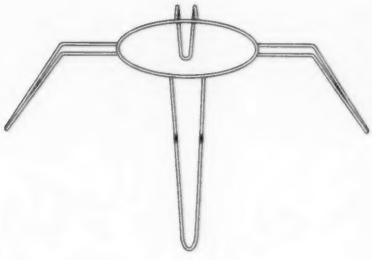
Gary Hokanson, Martinsville, Va., assignor to Stanley Furniture Company, Inc., Stanleytown, Va.

Filed Feb. 14, 2001, Appl. No. 137,095
Term of patent 14 years
LOC (7) Cl. 06 - *04*
U.S. Cl. D6—446

US D452,089 S
PAINT CONTAINER HOLDER

Terry Fritz, 43 Beechwood Road, Cambridge, Ontario, Canada, N1S 3S1

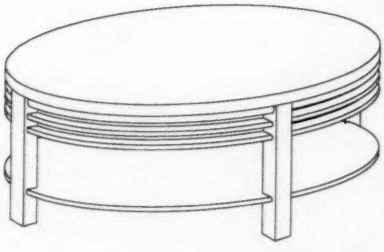
Filed Sep. 11, 2000, Appl. No. 129,163
Claims priority, application Canada, Mar. 14, 2000, 2000-0700
Term of patent 14 years
LOC (7) Cl. 06 - *04*
U.S. Cl. D6—458



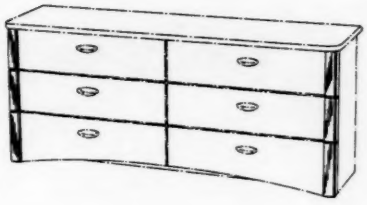
US D452,090 S
TABLE

Gary Hokanson, Martinsville, Va., assignor to Stanley Furniture Company, Inc., Stanleytown, Va.

Filed Feb. 14, 2001, Appl. No. 137,084
Term of patent 14 years
LOC (7) Cl. 06 - *03*
U.S. Cl. D6—484



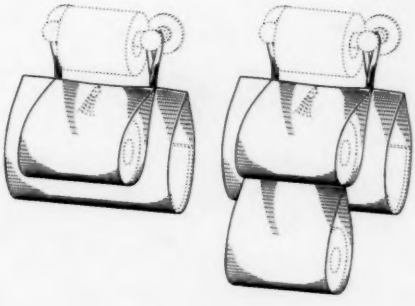
US D452,091 S
SIDE STRUCTURE FOR CASEGOODS
S. Paul Zaidman, Winnipeg, Canada, assignor to Palliser Furniture, Ltd., Winnipeg, Canada
Filed Jul. 31, 1998, Appl. No. 91,564
Term of patent 14 years
LOC (7) Cl. 06 - *06*
U.S. Cl. D6—492



US D452,092 S
COMBINED CHAIR SEAT/BACKREST
Wen-Hung Tseng, P.O. Box 63-247, Taichung, Taiwan, assignor to Wen-Hung Tseng, Kaoshiung; OCM International Inc., Taipei, both of Taiwan, and Gruga USA, City of Industry, Calif.
Filed Oct. 10, 2000, Appl. No. 130,809
Term of patent 14 years
LOC (7) Cl. 06 - *06*
U.S. Cl. D6—500

US D452,093 S
FURNITURE TRIM PIECE
Robert C. Johnson, Muscatine, Iowa, assignor to HON Technology Inc., Muscatine, Iowa
Filed May 18, 2000, Appl. No. 123,492
Term of patent 14 years
LOC (7) Cl. 06 - *04*
U.S. Cl. D6—509

US D452,094 S
BATHROOM TOILET PAPER ROLL AND MAGAZINE HOLDER
Connie M Akin, 2111 - 167th Ave., San Leandro, Calif. 94578
Filed May 1, 1998, Appl. No. 87,424
Term of patent 14 years
LOC (7) Cl. 20 - *02*
U.S. Cl. D6—515



US D452,095 S
ROLLED PRODUCT DISPENSER

Stephen L. Phelps, Lilburn; John A. Clement; David A. Nevins, both of Alpharetta; D. Scott Rowley, Powder Springs; Victoria L. Brackney, Atlanta; Gary E. Torkington, Lawrenceville, all of Ga., and Gary S. Pasternak, Brantford, Canada, assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Dec. 22, 2000, Appl. No. 134,586
Term of patent 14 years
LOC (7) Cl. 23 - *02*
U.S. Cl. D6—522

US D452,096 S
ROLLED PRODUCT DISPENSER

Stephen L. Phelps, Lilburn; John A. Clement; David A. Nevins, both of Alpharetta; D. Scott Rowley, Powder Springs; Victoria L. Brackney, Atlanta; Gary E. Torkington, Lawrenceville, all of Ga., and Gary S. Pasternak, Brantford, Canada, assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Dec. 22, 2000, Appl. No. 134,613
Term of patent 14 years
LOC (7) Cl. 23 - *02*
U.S. Cl. D6—522

US D452,097 S
GLASS HOLDER

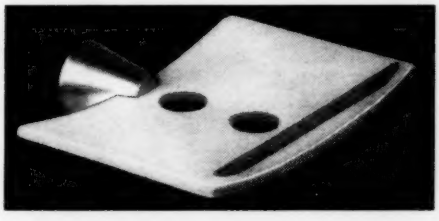
Reinhard Zetsche, Munich, Germany, assignor to Hansa Metallwerke AG, Germany

Filed Oct. 23, 2000, Appl. No. 131,490
Term of patent 14 years
LOC (7) Cl. 23 - *02*
U.S. Cl. D6—535

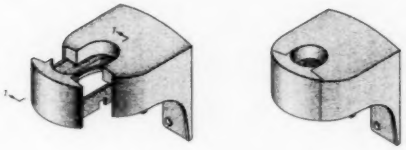
US D452,098 S
TRAY

Reinhard Zetsche, Munich, Germany, assignor to Hansa Metallwerke AG, Germany

Filed Oct. 23, 2000, Appl. No. 131,497
Term of patent 14 years
LOC (7) Cl. 23 - *02*
U.S. Cl. D6—540

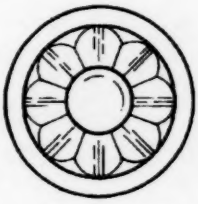


US D452,099 S
FLUID DISPENSER SUPPORT
James W. Poitras, Holliston; Dennis A. Nickerson, W. Medway, and Edwin W. Wlodyka, Ashland, all of Mass., assignors to Highland Laboratories, Inc., Ashland, Mass.
Filed Oct. 30, 1998, Appl. No. 95,868
Term of patent 14 years
LOC (7) Cl. 07 - *07*
U.S. Cl. D6—545

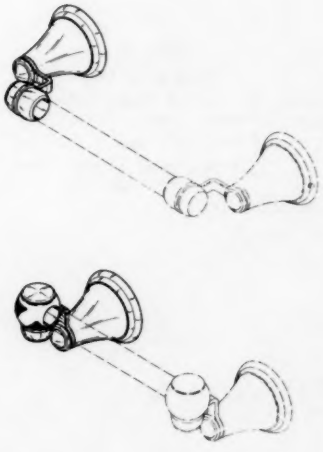


US D452,100 S
TOWEL BAR
Christopher Jon Gilbert, Moreland Hills, Ohio, assignor to Moen Incorporated, North Olmsted, Ohio
Filed Apr. 12, 2001, Appl. No. 140,163
Term of patent 14 years
LOC (7) Cl. 06 - *04*
U.S. Cl. D6—549

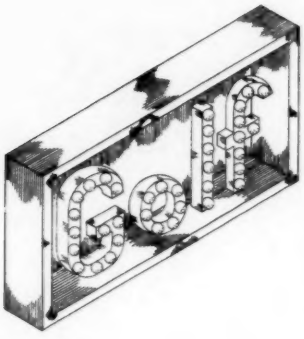
US D452,101 S
TOWEL BAR SUPPORT
Hsien-Min Yeh, No. 2, Nong16, Lane 169, Sec. 3, Chang-Tsao Road, Ho-Mei Chen, Chang-Hua Hsien, Taiwan
Filed Nov. 29, 2000, Appl. No. 133,360
Term of patent 14 years
LOC (7) Cl. 06 - *04*
U.S. Cl. D6—550



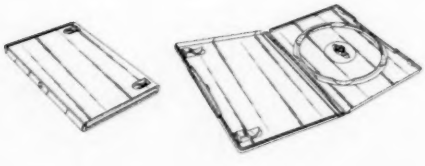
US D452,102 S
TOWEL BAR SUPPORT
Hsien-Min Yeh, No. 2, 16 Nong, Lane 169, Sec. 3, Chang-Tsao Road, Ho-Mei Chen, Chang-Hua Hsien, Taiwan
Filed Mar. 12, 2001, Appl. No. 138,287
Term of patent 14 years
LOC (7) Cl. 06 - *04*
U.S. Cl. D6—550



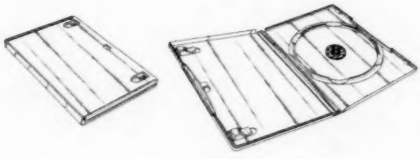
US D452,103 S
GOLF BALL DISPLAY CABINET
Earnest L. Williamson, 16802 Alabaster Ct., Houston, Tex. 77083
Filed Dec. 4, 2000, Appl. No. 133,523
Term of patent 14 years
LOC (7) Cl. 08 - *08*
U.S. Cl. D6—552



US D452,104 S
DISK HOLDER
Kam Sau Tang, North Point, China, assignor to Triple Keen Industrial Limited, North Point, China
Filed Nov. 7, 2000, Appl. No. 132,327
Term of patent 14 years
LOC (7) Cl. 06 - *04*
U.S. Cl. D6—632



US D452,105 S
DVD HOLDER
Man Wai Chan, Kowloon, China, assignor to Meco International Sources Ltd., Kowloon, China
Filed Mar. 27, 2001, Appl. No. 139,272
Term of patent 14 years
LOC (7) Cl. 06 - *04*
U.S. Cl. D6—635

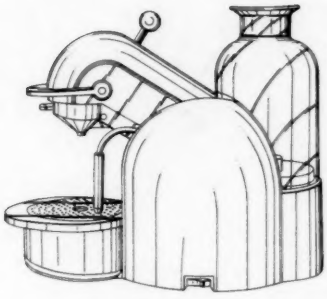


US D452,106 S
COMBINED COFFEE AND ESPRESSO MACHINE
Florian Seiffert, Wiesbaden, Germany, assignor to Robert Krups GmbH & Co., KG, Solingen, Germany
Filed Jan. 13, 1997, Appl. No. 64,873
Claims priority, application France, Jul. 12, 1996, 96 4140
Term of patent 14 years
LOC (7) Cl. 07 - *01*
U.S. Cl. D7—305

US D452,107 S
COFFEE MACHINE

Antoine Cahen, Lausanne, Switzerland, assignor to Societe des Produits Nestle S.A., Vevey, Switzerland

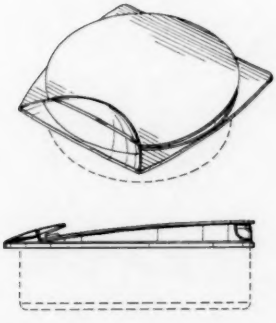
Filed Feb. 2, 2000, Appl. No. 117,768
Term of patent 14 years
LOC (7) Cl. 07 - *01*
U.S. Cl. D7—309



US D452,108 S
FRONT PANEL FOR A MICROWAVE OVEN

Liliana Maria Pereira Monguilod, São Paulo, Brazil, assignor to Multibras S/A Eletrodomesticos, Sao Paulo-SP, Brazil

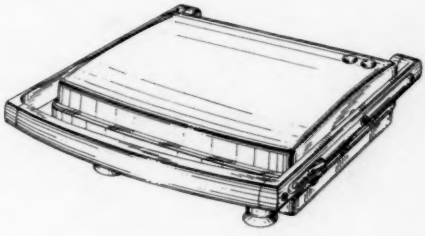
Filed Jul. 14, 2000, Appl. No. 126,431
Claims priority, application Brazil, Feb. 23, 2000, DI 6000274
Term of patent 14 years
LOC (7) Cl. 07 - *02*
U.S. Cl. D7—351



US D452,109 S
SANDWICH MAKER

Keith James Hensel, Naremburn, Australia, assignor to Sunbeam Corporation Limited, Campsie, Australia

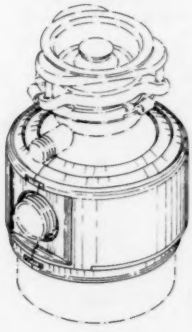
Filed Oct. 6, 2000, Appl. No. 130,775
Claims priority, application Australia, Apr. 6, 2000, 1115/00
Term of patent 14 years
LOC (7) Cl. 07 - *02*
U.S. Cl. D7—352



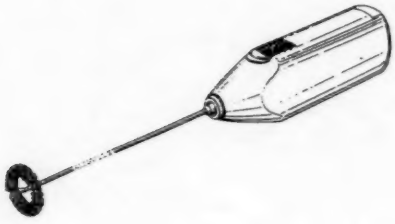
US D452,110 S
FOOD WASTE DISPOSER

Robert L. Brandel, Elm Grove; Scott W. Anderson, Racine, both of Wis., and Jonathan P. Van Dore, Minneapolis, Minn., assignors to Emerson Electric Co., St. Louis, Mo.

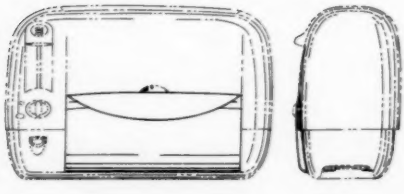
Filed Apr. 10, 2000, Appl. No. 121,625
Term of patent 14 years
LOC (7) Cl. 31 - *00*
U.S. Cl. D7—375



US D452,111 S
WHISK
Gary Arron Lane, London, United Kingdom, assignor to Aerolatte Limited, United Kingdom
Filed Mar. 15, 2001, Appl. No. 138,538
Term of patent 14 years
LOC (7) Cl. 31 - *00*
U.S. Cl. D7—376

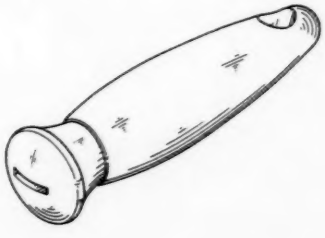


US D452,112 S
TOASTER
William C. Dobson, West Bend, Wis., and Gary Jan, Kwai Chung, The Hong Kong Special Administrative Region of the People's Republic of China, assignors to Premark WB Holdings, Inc., Wilmington, Del.
Filed May 14, 1999, Appl. No. 105,077
Term of patent 14 years
LOC (7) Cl. 07 - *02*
U.S. Cl. D7—390

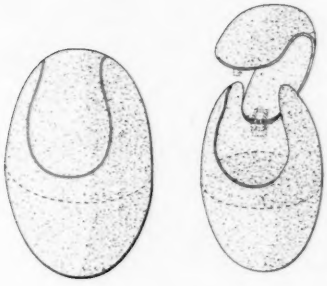


US D452,113 S
UTENSIL HANDLE
Bruce E. Ancona, and Joseph E. Gasparino, both of New York, N.Y., assignors to World Kitchen, Inc., Elmira, N.Y.
Filed Jan. 14, 2000, Appl. No. 117,081
Term of patent 14 years
LOC (7) Cl. 07 - *02*
U.S. Cl. D7—393

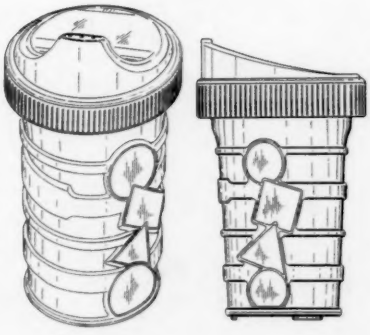
US D452,114 S
HANDLE
Yu Chen Lin, 7F, No. 348, Yung Chi Rd., Hsin Yi Dist., Taipei, Taiwan
Filed Feb. 15, 2001, Appl. No. 137,277
Term of patent 14 years
LOC (7) Cl. 07 - *02*
U.S. Cl. D7—395



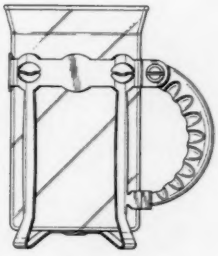
US D452,115 S
EGG CONTAINER
Uzi Malimovka, Giv'at-Shmuel, Israel, assignor to Snubelgrass Interactive Ltd., Matan, Israel
Filed Apr. 17, 2000, Appl. No. 121,897
Term of patent 14 years
LOC (7) Cl. 07 - *01*
U.S. Cl. D7—503



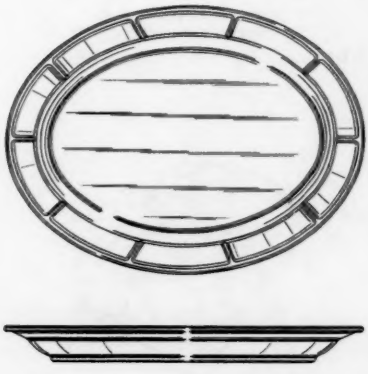
US D452,116 S
TRAINER CUP
Justin E. McDonough, 12 Ballentine St., Kenvil, N.J. 07847, and Steve Aridgides, 327 Michael Rd., Yardley, Pa. 19067
Division of application No. 29/124,904, filed on Jun. 12, 2000, which is a continuation-in-part of application No. 29/116,372, filed on Dec. 30, 1999. This application Jun. 6, 2001, Appl. No. 143,057.
Term of patent 14 years
LOC (7) Cl. 07 - *01*
U.S. Cl. D7—510



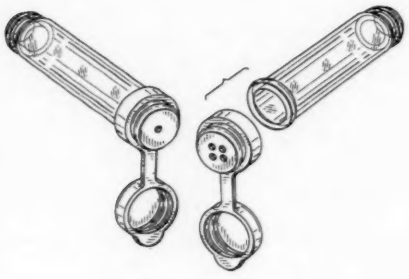
US D452,117 S
DRINKING CUP
Chung-Jang Yeh, No.87, Bei Mei Road, Ho Mei Town, Chang Hua Hsien, Taiwan
Filed May 24, 2000, Appl. No. 123,693
Term of patent 14 years
LOC (7) Cl. 07 - *01*
U.S. Cl. D7—536



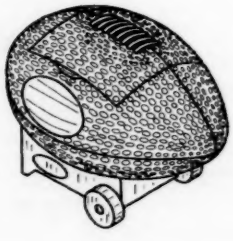
US D452,118 S
PLATTER
Kenneth R. Benson, Southbury, Conn., assignor to Libbey Glass Inc., Toledo, Ohio
Filed Feb. 9, 2000, Appl. No. 118,566
Term of patent 14 years
LOC (7) Cl. 07 - *01*
U.S. Cl. D7—586



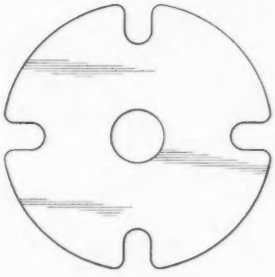
US D452,119 S
CONDIMENT DISPENSER
Nicole A. Zeller, Harrison, and Stuart Harvey Lee, New York, both of N.Y., assignors to Zelco Industries, Inc., Mount Vernon, N.Y.
Filed Jul. 23, 1999, Appl. No. 108,314
Term of patent 14 years
LOC (7) Cl. 07 - *06*
U.S. Cl. D7—591



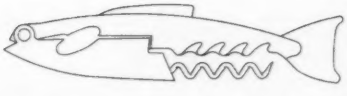
US D452,120 S
FOOTBALL COOLER
Patrick J. Brangle, 1123 Sanford Ave., St. Louis, Mo. 63139, and Michael C. Polizzi, 9659 Chamblin Dr., St. Louis, Mo. 63123
Filed Feb. 29, 2000, Appl. No. 119,432
Term of patent 14 years
LOC (7) Cl. 07 - *01*
U.S. Cl. D7—606

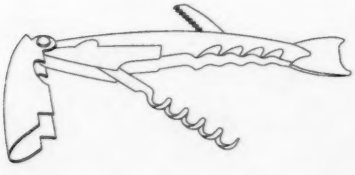


US D452,121 S
TOOL FOR REMOVING A SEWER POP-UP VALVE CAP
Emery C. Teichelman, 1800 Granger Rd., Taylor, Tex. 76574
Filed May 30, 2000, Appl. No. 123,999
Term of patent 14 years
LOC (7) Cl. 08 - *05*
U.S. Cl. D8—19

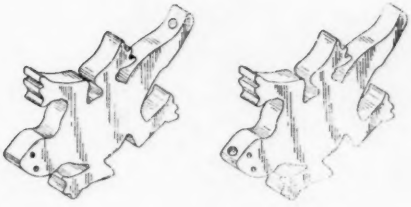


US D452,122 S
CORKSCREW
Mark Christopher Hughes, and Januse Lucien Holland, both of Birmingham, United Kingdom, assignors to Reality Products Limited, Birmingham, United Kingdom
Filed Aug. 4, 1999, Appl. No. 108,867
Claims priority, application United Kingdom, Feb. 4, 1999, 2080880
Term of patent 14 years
LOC (7) Cl. 07 - *99*
U.S. Cl. D8—38

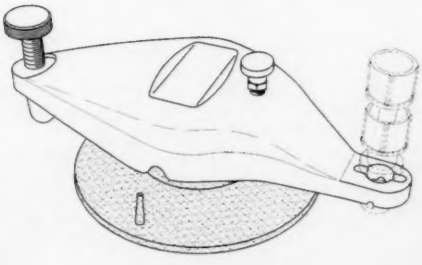




US D452,123 S
GECKO SHAPED BOTTLE OPENER
Brian James Kelleghan, Longmont, Colo., assignor to Bison Designs, L.L.C., Longmont, Colo.
Filed Jan. 22, 2001, Appl. No. 135,990
Term of patent 14 years
LOC (7) Cl. 07 - *99*
U.S. Cl. D8—38



US D452,124 S
WINDSHIELD REPAIR BRIDGE
Jonathan P. Thomas, Maple Lake, Minn.; A. Allan Skidmore, Langley, Canada, and Keith A. Beveridge, Edina, Minn., assignors to TCG International Inc., Burnaby, Canada
Filed Mar. 28, 2000, Appl. No. 120,860
Term of patent 14 years
LOC (7) Cl. 08 - *05*
U.S. Cl. D8—51



US D452,125 S
TAPER SCISSORS
Roland Quessard, Romorantin, France, assignor to Velecta Paramount, France
Filed Nov. 3, 2000, Appl. No. 132,124
Claims priority, application France, May 4, 2000, 00 2849
Term of patent 14 years
LOC (7) Cl. 08 - *03*
U.S. Cl. D8—57

US D452,126 S
HAMMER
Yi-Kung Hung, No. 29, Putou St., Lochin Li, Lukang Chen, Changhua Hsien, Taiwan
Filed Nov. 29, 2000, Appl. No. 133,351
Term of patent 14 years
LOC (7) Cl. 08 - *02*
U.S. Cl. D8—75

US D452,127 S

TOOL CLAMPING SEAT

Kun Chih Hung, No. 56, Shin Ren 3rd Street, Ta Li City, Taichung Hsien, Taiwan

Filed Nov. 28, 2000, Appl. No. 133,240

Term of patent 14 years

LOC (7) Cl. 08 - *04*

U.S. Cl. D8—85

US D452,128 S

WELDING GUN HANDLE

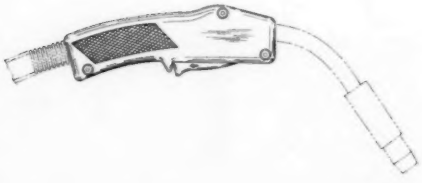
Antonio Delfino, and Dario Delfino, both of Milan, Italy, assignors to OCIM, S.r.l., Milan, Italy

Filed Mar. 20, 2000, Appl. No. 120,512

Term of patent 14 years

LOC (7) Cl. 08 - *05*

U.S. Cl. D8—107



US D452,129 S

LIGHTED KNIFE HANDLE

Gavin McCalla, and William R. Lutz, both of Cumming, Ga., assignors to McCalla Co., Alpharetta, Ga.

Filed Aug. 11, 2000, Appl. No. 127,773

Term of patent 14 years

LOC (7) Cl. 22 - *02*

U.S. Cl. D8—107

US D452,130 S

HANDLE

Leigh Richardson, Upper Hutt, New Zealand, assignor to Interlock Group Limited, New Zealand

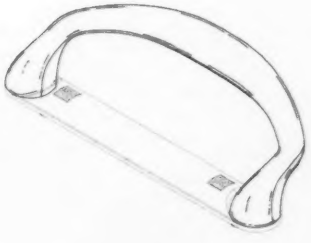
Filed Aug. 15, 2000, Appl. No. 127,999

Claims priority, application New Zealand, Feb. 18, 2000, 400459

Term of patent 14 years

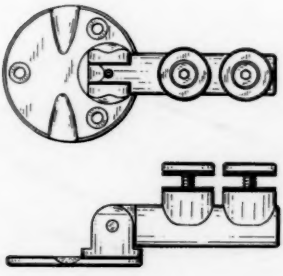
LOC (7) Cl. 08 - *06*

U.S. Cl. D8—319

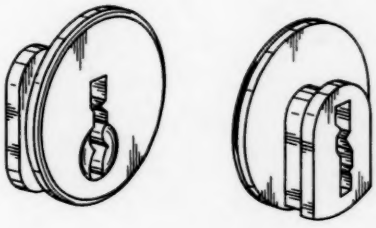


US D452,131 S
DOOR HANDLE
Lawrence G. Rodriguez, Anaheim, Calif., assignor to Emhart Inc., Newark, Del.
Filed Apr. 4, 2001, Appl. No. 139,657
Term of patent 14 years
LOC (7) Cl. 08 - *06*
U.S. Cl. D8—320

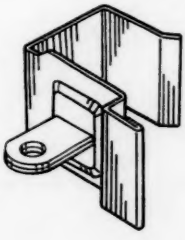
US D452,132 S
HINGE
Jörg Loggen, Windeck, Germany, assignor to KL-Beschläge Karl Loggen GmbH, Eitorf, Germany
Filed Apr. 4, 2001, Appl. No. 139,652
Term of patent 14 years
LOC (7) Cl. 08 - *06*
U.S. Cl. D8—327



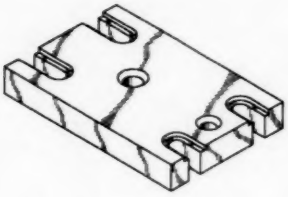
US D452,133 S
PROFILED CLOSED DISC FOR SECURING TO A CYLINDER LOCK
Björn Rubensson, Vitsippsvägen, Sweden, assignor to Assa AB, Eskilstuna, Sweden
Filed Apr. 30, 1997, Appl. No. 70,926
Claims priority, application Sweden, Oct. 31, 1996, 96-2313
This patent is subject to a terminal disclaimer.
Term of patent 14 years
LOC (7) Cl. 08 - *07*
U.S. Cl. D8—343



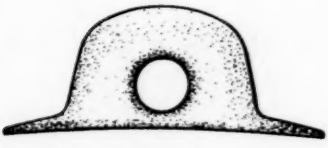
US D452,134 S
DOOR LOCK
Blair E. Johns, 3918 W. Coronado, Phoenix, Ariz. 85009
Filed Apr. 25, 2000, Appl. No. 122,323
Term of patent 14 years
LOC (7) Cl. 08 - *07*
U.S. Cl. D8—345



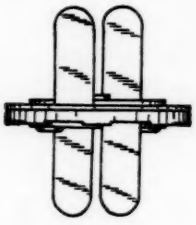
US D452,135 S
WINCH HORIZONTAL MOUNTING BRACKET
Bruce A. Wyatt, Garland, and J. Scott Somers, Dallas, both of Tex., assignors to Concord Industries, Inc., Addison, Tex.
Filed Mar. 9, 2001, Appl. No. 138,320
Term of patent 14 years
LOC (7) Cl. 08 - *05*
U.S. Cl. D8—354



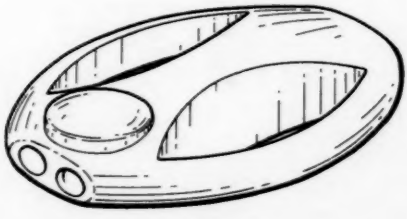
US D452,136 S
ROPE RETAINER
Richard John Arthur Harding, Dyfed, United Kingdom, assignor to Avon Inflatables Limited
Filed Jun. 20, 1997, Appl. No. 91,290
Claims priority, application United Kingdom, Dec. 20, 1996, 2061959
Term of patent 14 years
LOC (7) Cl. 08 - *05*
U.S. Cl. D8—356



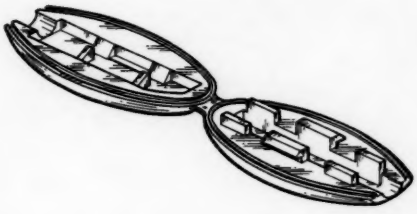
US D452,137 S
MAGNETIC FASTENER
Yoshihiro Aoki, Tokyo, Japan, assignor to Application Art Laboratories Co., Ltd., Tokyo, Japan
Division of application No. 29/102,133, filed on Mar. 17, 1999, which is a division of application No. 29/089,188, filed on Jun. 9, 1998, now Pat. No. Des. 412,865. This application Jan. 31, 2000, Appl. No. 117,612.
Term of patent 14 years
LOC (7) Cl. 08 - *08*
U.S. Cl. D8—382



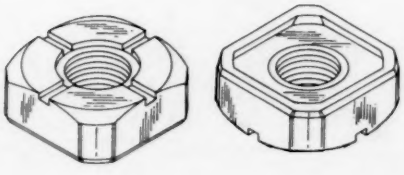
US D452,138 S
CORD TIGHTENING DEVICE
Koji Murata, Lille, France, assignor to YKK Corporation, Tokyo, Japan
Filed Apr. 5, 2001, Appl. No. 139,690
Claims priority, application France, Oct. 5, 2000, 00 5756
Term of patent 14 years
LOC (7) Cl. 08 - *08*
U.S. Cl. D8—383



US D452,139 S
CORD END
Koji Murata, Lille, France, assignor to YKK Corporation, Tokyo, Japan
Filed Apr. 5, 2001, Appl. No. 139,692
Claims priority, application France, Oct. 5, 2000, 00 5756
Term of patent 14 years
LOC (7) Cl. 08 - *08*
U.S. Cl. D8—394



US D452,140 S
CLINCH NUT
Katsumi Shinjo, Osaka; Tadashi Shinjo, Sakai, and Hiroshi Shinjo, Osaka, all of Japan, assignors to Yugenkaisha Shinjo Seisakusho, Osaka, Japan
Filed Oct. 31, 2000, Appl. No. 131,914
Claims priority, application Japan, May 11, 2000, 12-012358
Term of patent 14 years
LOC (7) Cl. 08 - *08*
U.S. Cl. D8—397



US D452,141 S
LINK FOR STEEL ROLLING DOOR
Kuei-Chang Liu, 43-07 Crommelin Ave., GFL Flushing, N.Y. 11355-4914
Filed Mar. 24, 2000, Appl. No. 120,686
Term of patent 14 years
LOC (7) Cl. 08 - *99*
U.S. Cl. D8—499

US D452,142 S
SPRAYER
David Edward Wilson, Reisterstown; Bryan Michael Kadlubowski, Manchester; Jeffrey Keith Leppla, Baltimore, all of Md.; Yoshito Komada, Yamatokooriyama, Japan; Wataru Hirose, Kyoto, Japan; Yoshihiro Wakiyama, Uji, Japan; Takeshi Aoyama, Uji, Japan; Takeshi Mori, Uji, Japan, and Toru Sumiyoshi, Ashiya, Japan, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 12, 2001, Appl. No. 135,560
Term of patent 14 years
LOC (7) Cl. 09 - *01*
U.S. Cl. D9—300

US D452,143 S

DISHWASHING MACHINE SACHET

Naresh Dhirajlal Ghatlia, Rutherford, N.J.; Natasha Pfeiffer, New York, N.Y., and Isaac Israel Secemski, Teaneck, N.J., assignors to Unilever Home & Personal Care USA, division of Conopco, Inc., Greenwich, Conn.

Filed Mar. 16, 2001, Appl. No. 138,593

Term of patent 14 years

LOC (7) Cl. 09 - *05*

U.S. Cl. D9—305

US D452,144 S

PACKAGE FOR FLOWABLE FOOD PRODUCT

Thomas Tedeschi, Jr., Brewster, and Piaras De Cleir, Sleepy Hollow, both of N.N.Y., assignors to Kraft Foods Holdings, Inc., Northfield, Ill.

Filed Apr. 18, 2001, Appl. No. 140,398

Term of patent 14 years

LOC (7) Cl. 09 - *05*

U.S. Cl. D9—305

US D452,145 S

GEL DISPENSING DEVICE

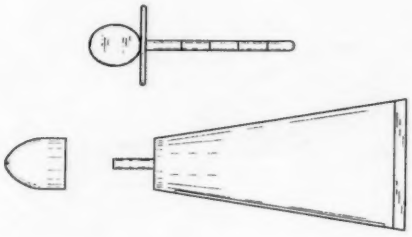
Ramkarran Sukhlall, 621 Hill St., Uniondale, N.Y. 11553

Filed Apr. 12, 2001, Appl. No. 140,119

Term of patent 14 years

LOC (7) Cl. 09 - *05*

U.S. Cl. D9—306



US D452,146 S

COMBINATION OF A TRAY AND AN ARRANGEMENT OF SHRIMP

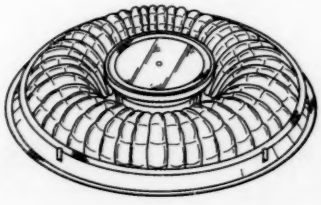
Duke Lin, Rancho Palos Verdes, Calif., assignor to Ocean Duke Corporation, Torrance, Calif.

Filed Dec. 12, 2000, Appl. No. 133,940

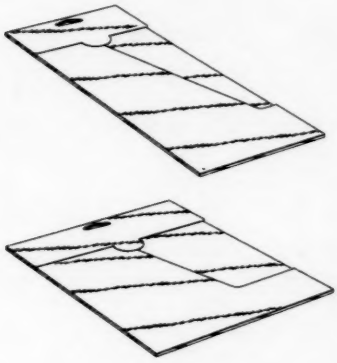
Term of patent 14 years

LOC (7) Cl. 09 - *03*

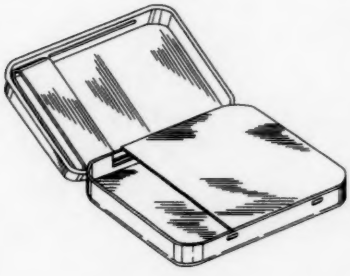
U.S. Cl. D9—337



US D452,147 S
SANDPAPER PACKAGE
Russul M. Patel; Suzanne K. Strom, both of St. Paul; Todd A. Wetter, Oakdale, all of Minn., and John Lonczak, Newburgh, N.Y., assignors to 3M Innovative Properties Company, St. Paul, Minn.
Filed Jul. 30, 1999, Appl. No. 108,620
Term of patent 14 years
LOC (7) Cl. 09 - *03*
U.S. Cl. D9—415



US D452,148 S
COMBINATION CONTAINER AND RETENTION DEVICE
Eric Friedberg, 140 Crafts St., Newton, Mass. 02460
Filed Dec. 28, 2000, Appl. No. 134,819
Term of patent 14 years
LOC (7) Cl. 09 - *03*
U.S. Cl. D9—423



US D452,149 S
CONDIMENT CUP
Gary Nance, 1805 Ellison Dr., Modesto, Calif. 95355
Continuation-in-part of application No. 29/124,653, filed on Jun. 9, 2000, now Pat. No. Des. 445,676. This application Mar. 27, 2001, Appl. No. 139,331.
Term of patent 14 years
LOC (7) Cl. 09 - *03*
U.S. Cl. D9—424

US D452,150 S
CONTAINER
Peter Viner, Wetherby, United Kingdom, assignor to H.P. Bulmer Limited, Hereford, United Kingdom
Filed Oct. 18, 2000, Appl. No. 131,301
Claims priority, application United Kingdom, Apr. 18, 2000, 2092261
Term of patent 14 years
LOC (7) Cl. 09 - *03*
U.S. Cl. D9—428

US D452,151 S

LIDDED CONTAINER

Donald A. Scott, Wadesville, Ind., assignor to The Pinkerton Tobacco Company, Richmond, Va.

Filed Mar. 14, 2001, Appl. No. 138,480
Term of patent 14 years
LOC (7) Cl. 09 - *03*
U.S. Cl. D9—428

US D452,152 S

PACKAGE

Shane Edwin Meeker, Maineville, Ohio; Ronald Peter DeVlam, Chicago, Ill.; Mary Carmen Gasco, Cincinnati, Ohio; Mark William Rakentine, Gloucester Point, Va.; Pat Lee O'Brien, Yorktown, Va.; Jean-Marc Henri Kirouac, and Janet Adele Veith, both of Williamsburg, Va., assignors to The Procter & Gamble Company, Cincinnati, Ohio

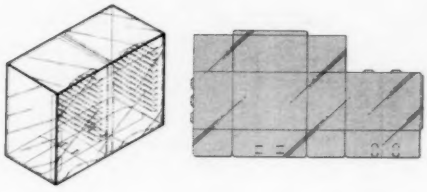
Filed Jun. 27, 2000, Appl. No. 125,599
Term of patent 14 years
LOC (7) Cl. 09 - *03*
U.S. Cl. D9—429

US D452,153 S

TRANSPARENT DISPLAY AND STORAGE BOX

Shahriar Dardashti, c/o Atlantic, Inc., P.O. Box 2399, Santa Fe Springs, Calif. 90670

Division of application No. 29/115,119, filed on Dec. 8, 1999, now Pat. No. Des. 444,061. This application Dec. 14, 2000, Appl. No. 134,170.
Term of patent 14 years
LOC (7) Cl. 09 - *03*
U.S. Cl. D9—430

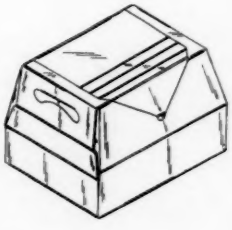


US D452,154 S

BEVERAGE COOLER BOX

Terrance E. Rhodes, Erie; Brett Lee Schuetz, Thornton; Michael Christopher Cruz; Patricia O. Shibata, both of Denver; Lee Buxton, Longmont; Patrick B. Edson, Lakewood; Raymond Scott Kastanek, Longmont; Gary Lawrence Gresge, Arvada, and Stephen Mark Kaczmarek, Golden, all of Colo., assignors to Coors Brewing Company, and Graphic Packaging Corporation, both of Golden, Colo.

Filed Mar. 21, 2001, Appl. No. 139,015
Term of patent 14 years
LOC (7) Cl. 09 - *03*
U.S. Cl. D9—432



US D452,155 S
CAN END
Ralph P. Stodd, Dayton, Ohio, assignor to Container Development LTD, Dayton, Ohio
Filed Aug. 15, 2000, Appl. No. 127,936
Term of patent 14 years
LOC (7) Cl. 09 - *07*
U.S. Cl. D9—454

US D452,156 S
BOTTLE
Emily Kitchings Kokenge, Dallas, Tex.; Ares Marasligiller, Cincinnati, Ohio; Denise Irene Siebert, Franklin, Ohio, and Shane Edwin Meeker, Maineville, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 14, 1999, Appl. No. 115,411
Term of patent 14 years
LOC (7) Cl. 09 - *01*
U.S. Cl. D9—521

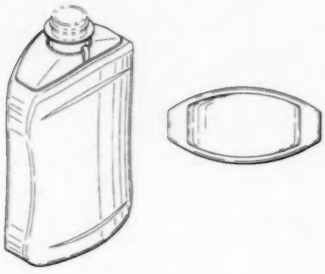
US D452,157 S
BOTTLE AND TOP
Robert White, Dandenong, and Lisa Fryatt, Richmond, both of Australia, assignors to SDI International Pty. Ltd., Dandenong, Australia
Filed Jun. 8, 2000, Appl. No. 124,544
Claims priority, application Australia, Dec. 8, 1999, 4041/99
Term of patent 14 years
LOC (7) Cl. 09 - *01*
U.S. Cl. D9—523

US D452,158 S
CONTAINER
Douglas M. Dygert, Olive Branch, Miss., assignor to Ring Can Corporation, Oakland, Tenn.
Filed Aug. 18, 2000, Appl. No. 128,100
Term of patent 14 years
LOC (7) Cl. 09 - *01*
U.S. Cl. D9—538

US D452,159 S
BOTTLE

Deborah A. Beiser, Walnut Creek; Rosa A Piña, Oakland, both of Calif., and Donald C. Neitzel, Jr., Toledo, Ohio, assignors to The Clorox Company, Oakland, Calif.

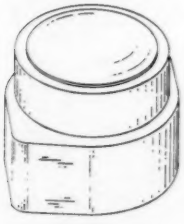
Filed Oct. 6, 1999, Appl. No. 111,925
Term of patent 14 years
LOC (7) Cl. 09 - *01*
U.S. Cl. D9—542



US D452,160 S
JAR

Mark F. Mettler, Spring Lake, Mich., assignor to Amway Corporation, Ada, Mich.

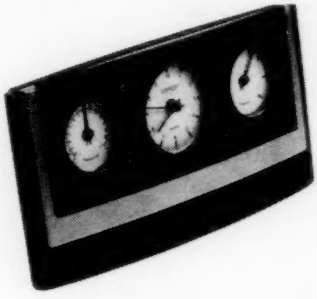
Filed Sep. 8, 1999, Appl. No. 110,504
Term of patent 14 years
LOC (7) Cl. 09 - *03*
U.S. Cl. D9—574



US D452,161 S
CLOCK WITH THERMOMETER AND HUMIDITY METER

Chuk Shun Chan, Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands

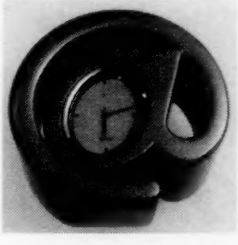
Filed Jun. 22, 2000, Appl. No. 125,326
Claims priority, application Hague Agreement, Dec. 22, 1999, DM/050 245
Term of patent 14 years
LOC (7) Cl. 10 - *01*
U.S. Cl. D10—4



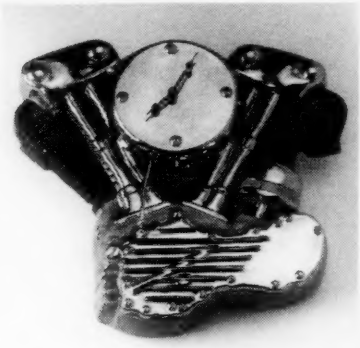
US D452,162 S
SOLID METAL CLOCK

Shuk Shun Chan, Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands

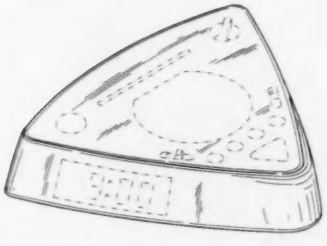
Filed Oct. 21, 1999, Appl. No. 112,671
Term of patent 14 years
LOC (7) Cl. 10 - *01*
U.S. Cl. D10—6



US D452,163 S
MOTORCYCLE MOTOR CLOCK
Michael Abbott, 14382 Rios Canyon Rd., El Cajon, Calif. 92021, assignor to Michael Abbott, El Cajon, Calif.
Filed Apr. 14, 1997, Appl. No. 67,928
Term of patent 14 years
LOC (7) Cl. 10 - *01*
U.S. Cl. D10—12

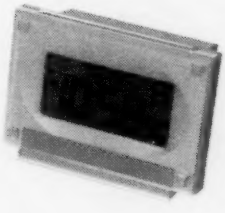


US D452,164 S
DUAL FACE ALARM CLOCK
Scott A. Buss, 403 Schefield Rd. - #204, Waukesha, Wis. 53186
Filed Nov. 21, 2000, Appl. No. 133,046
Term of patent 14 years
LOC (7) Cl. 10 - *01*
U.S. Cl. D10—14

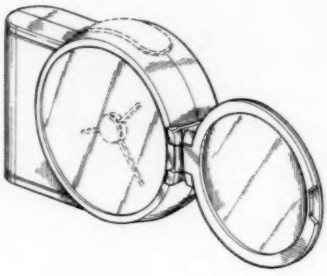


US D452,165 S
CLOCK
Tetsunori Sato, Fussa, Japan, assignor to Casio Keisanki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 20, 2001, Appl. No. 137,372
Term of patent 14 years
LOC (7) Cl. 10 - *01*
U.S. Cl. D10—15

US D452,166 S
CLOCK
Tetsunori Sato, Fussa, Japan, assignor to Casio Keisanki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 20, 2001, Appl. No. 137,408
Term of patent 14 years
LOC (7) Cl. 10 - *01*
U.S. Cl. D10—15

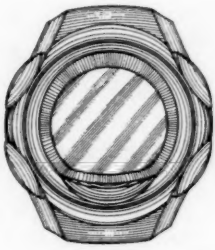


US D452,167 S
TRAVEL ALARM CLOCK
Mitra Leyde, 281 Gateway Dr., No. 253, Pacifica, Calif. 94044; Paul Lacotta, 403 Blvd., Glen Rock, N.J. 07452, and William C. Fiebel, 60 Surrey La., Clifton, N.J. 07012
Filed Sep. 25, 2000, Appl. No. 129,938
Term of patent 14 years
LOC (7) Cl. 10 - *01*
U.S. Cl. d10—18

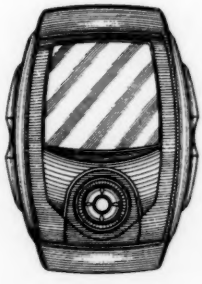


US D452,168 S
CASING FOR A WATCH
Judith Riley, Goshen, Conn., assignor to Timex Group B.V., Netherlands
Filed Jun. 15, 2000, Appl. No. 125,027
Term of patent 14 years
LOC (7) Cl. 10 - *02*
U.S. Cl. D10—30

US D452,169 S
WATCH CASE
Seiji Syoubayashi, Tachikawa, Japan, assignor to Casio Keisanki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 26, 2001, Appl. No. 136,623
Term of patent 14 years
LOC (7) Cl. 10 - *02*
U.S. Cl. D10—30



US D452,170 S
WATCH CASE
Daisuke Tomimatsu, Tachikawa, Japan, assignor to Casio Keisanki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 29, 2001, Appl. No. 139,412
Term of patent 14 years
LOC (7) Cl. 10 - *02*
U.S. Cl. D10—30



US D452,171 S
WRISTWATCH

Giampiero Bodino, Milan, Italy, assignor to Gucci Timepieces SA, Lengnau, Switzerland

Filed May 2, 2000, Appl. No. 122,665
Claims priority, application Hague Agreement, Feb. 1, 2000, DMA/004 776
Term of patent 14 years
LOC (7) Cl. 10 - *02*
U.S. Cl. D10—32

US D452,172 S
WATCH AND GLASS-MADE RING FOR A DIAL OF A WATCH

Remington von Burg, Grenchen, Switzerland, assignor to D. Swarovski & Co., Wattens, Austria

Filed May 4, 2000, Appl. No. 122,813
Claims priority, application Austria, Nov. 4, 1999, MU 3964/99-3967/99
Term of patent 14 years
LOC (7) Cl. 10 - *02*
U.S. Cl. D10—32

US D452,173 S
WRISTWATCH

Barbara Giardiello, Naples, Italy, assignor to Sector Group SA, Neuchatel, Switzerland

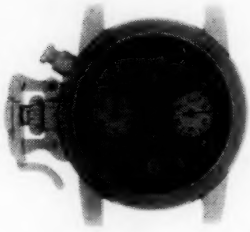
Filed Jun. 28, 2000, Appl. No. 125,690
Claims priority, application Hague Agreement, Feb. 17, 2000, DMA/004 793
Term of patent 14 years
LOC (7) Cl. 10 - *02*
U.S. Cl. D10—32

US D452,174 S
WRISTWATCH

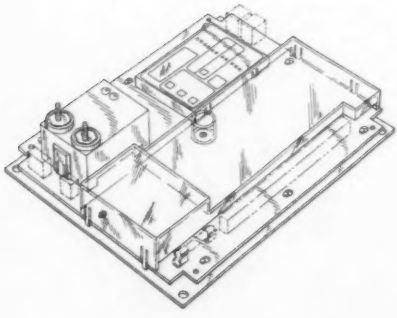
Barbara Giardiello, Naples, Italy, assignor to Sector Group SA, Neuchatel, Switzerland

Filed Jan. 12, 2001, Appl. No. 135,393
Claims priority, application Hague Agreement, Aug. 10, 2000, DMA/004 986
Term of patent 14 years
LOC (7) Cl. 10 - *02*
U.S. Cl. D10—32

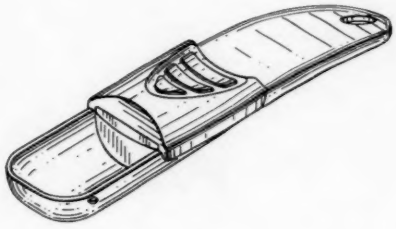
US D452,175 S
WATCH
Pierre-André Finazzi, La Chaux-de-Fonds, Switzerland, assignor to Les Monts SA, La Chaux-de-Fonds, Switzerland
Filed Sep. 20, 2000, Appl. No. 129,639
Claims priority, application Hague Agreement, Apr. 12, 2000, DMA/004 872
Term of patent 14 years
LOC (7) Cl. 10 - *02*
U.S. Cl. D10—39



US D452,176 S
TIMER CONTROLLER
Daniel A. Heuer, New Carlisle, Ind., assignor to Dwyer Instruments, Inc., Michigan City, Ind.
Filed Aug. 1, 2000, Appl. No. 127,210
Term of patent 14 years
LOC (7) Cl. 10 - *03*
U.S. Cl. D10—40

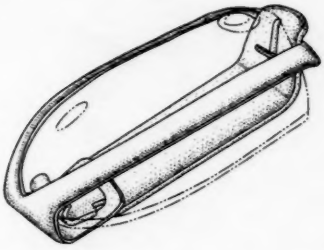


US D452,177 S
ADJUSTABLE MEASURING SPOON
Carter W. McGuyer, Muscle Shoals, Ala., assignor to Robbins Industries, Inc., Florence, Ala.
Filed Nov. 3, 2000, Appl. No. 132,173
Term of patent 14 years
LOC (7) Cl. 10 - *04*
U.S. Cl. D10—46.3

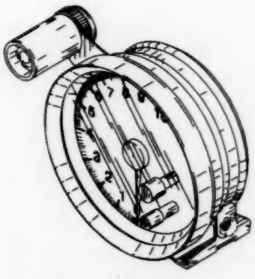


US D452,178 S
PROBE THERMOMETER
Ho Wai Ming, Tsing Lung Tau, The Hong Kong Special Administrative Region of the People's Republic of China; Ronald J. Kovarsky, Highland Park, Ill., and Paul Mayer, Burlington, Wis., assignors to Chaney Instrument Company, Lake Geneva, Wis.
Filed May 26, 2000, Appl. No. 123,913
This patent is subject to a terminal disclaimer.
Term of patent 14 years
LOC (7) Cl. 10 - *04*
U.S. Cl. D10—57

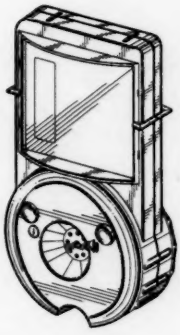
US D452,179 S
ATTACHMENT STRUCTURE FOR AN ACCELEROMETER
Steven L. King, Beaverton, and Edward Boyd, Tigard, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Oct. 13, 2000, Appl. No. 131,279
Term of patent 14 years
LOC (7) Cl. 10 - *04*
U.S. Cl. D10—80



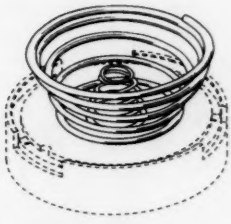
US D452,180 S
SLIM PROFILE TACHOMETER
Vincent H. Rose, P.O. Box 599, Powell, Wyo. 82435
Filed Aug. 10, 2000, Appl. No. 127,692
Term of patent 14 years
LOC (7) Cl. 10 - *04*
U.S. Cl. D10—98



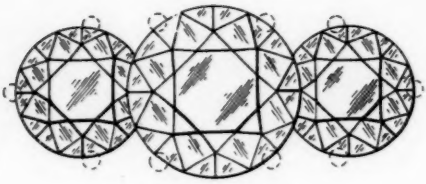
US D452,181 S
LIGHT DETECTOR
Donald W. Zurwelle, Lutherville, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Feb. 23, 2001, Appl. No. 137,579
Term of patent 14 years
LOC (7) Cl. 10 - *05*
U.S. Cl. D10—106



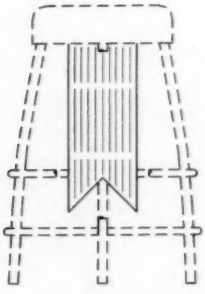
US D452,182 S
AUDIBLE SIGNAL FOR ALARMS
Mitsuhiro Masuda; Yasunori Tsukuda, and Yoshio Imahori, all of Shizuoka, Japan, assignors to Star Micronics Co., Ltd., Shizuoka, Japan
Filed Mar. 28, 2001, Appl. No. 139,255
Claims priority, application Japan, Sep. 29, 2000, 12-027527
Term of patent 14 years
LOC (7) Cl. 10 - *05*
U.S. Cl. D10—116



US D452,183 S
JEWELRY STONE ASSEMBLY
Anthony Pinto, White Plains, N.Y., assignor to Sandberg & Sikorski Diamond Corporation, New York, N.Y.
Filed May 30, 2001, Appl. No. 142,664
Term of patent 14 years
LOC (7) Cl. 11 - *01*
U.S. Cl. D11—91

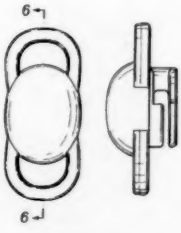


US D452,184 S
STOOL WITH A HANGING BANNER
Paul W. Schneider, 2919 N. Mill Rd., Oconomowoc, Wis. 53066
Filed Nov. 20, 2000, Appl. No. 133,010
Term of patent 14 years
LOC (7) Cl. 11 - *05*
U.S. Cl. D11—165



US D452,185 S
BUCKLE
Manabu Yoshiguchi, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Jun. 15, 1999, Appl. No. 106,306
Claims priority, application Japan, Dec. 21, 1998, 10-36525
Term of patent 14 years
LOC (7) Cl. 02 - *07*
U.S. Cl. D11—218

US D452,186 S
SLIDER FOR SLIDE FASTENERS
Megumi Fujisaka, Kurobe, Japan, assignor to YKK Corporation, Japan
Filed Nov. 9, 2000, Appl. No. 132,388
Claims priority, application Japan, May 15, 2000, 12-012599
Term of patent 14 years
LOC (7) Cl. 02 - *07*
U.S. Cl. D11—228

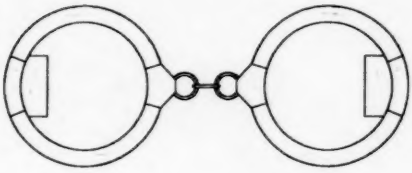


US D452,187 S

NOVELTY BUCKLE

Luis A Perez, 9005 Southbay Dr., Tampa, Fla. 33615

Filed Jun. 8, 2001, Appl. No. 143,146
Term of patent 14 years
LOC (7) Cl. 02 - *07*
U.S. Cl. D11—231

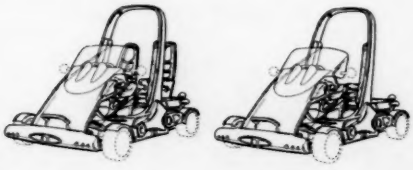


US D452,188 S

SURFACE CONFIGURATION OF A VEHICLE AND/OR TOY BODY

Ralph Hettich, Kernen/Stetten, and Guenter Hoelzel, Hochdorf, both of Germany, assignors to DaimlerChrysler AG, Stuttgart, Germany

Filed Nov. 22, 1999, Appl. No. 114,453
Claims priority, application Germany, May 21, 1999, 4 99 04 901
Term of patent 14 years
LOC (7) Cl. 12 - *08*
U.S. Cl. D12—86

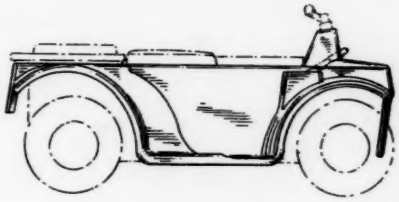


US D452,189 S

BODY FOR ELECTRICALLY POWERED VEHICLE

Rick G. Doran, 5672 Littler Dr., Huntington Beach, Calif. 92649

Filed Jan. 4, 2001, Appl. No. 135,056
Term of patent 14 years
LOC (7) Cl. 12 - *08*
U.S. Cl. D12—86

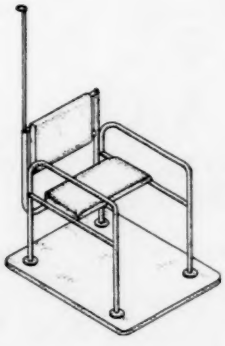


US D452,190 S

DRESSING CHAIR FOR THE HANDICAPPED AND INFIRMED

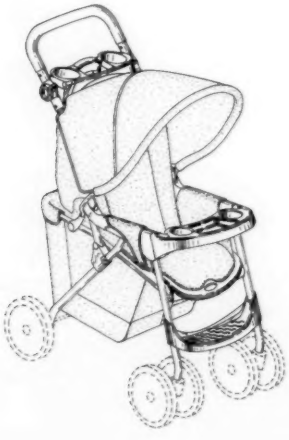
Morley J. Harper, 2453 Forest Leaf Pkwy., Wildwood, Mo. 63011

Filed Feb. 7, 2000, Appl. No. 118,178
Term of patent 14 years
LOC (7) Cl. 12 - *12*
U.S. Cl. D12—128



US D452,191 S
SIDE-BY-SIDE STROLLER
Jason A. Carpenter, Reinholds, Pa., assignor to Graco Children's Products Inc., Elverson, Pa.
Filed May 8, 2000, Appl. No. 122,941
Term of patent 14 years
LOC (7) Cl. 12 - *72*
U.S. Cl. D12—129

US D452,192 S
FOLDABLE STROLLER
Curtis M. Hartenstine, Birdsboro, and Christine E. Julien, Reading, both of Pa., assignors to Graco Children's Products Inc., Elverson, Pa.
Filed May 8, 2000, Appl. No. 122,942
Term of patent 14 years
LOC (7) Cl. 12 - *12*
U.S. Cl. D12—129

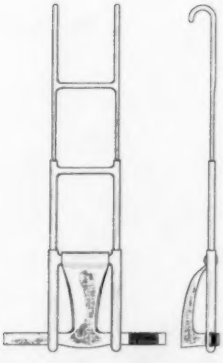


US D452,193 S
STROLLER
Keith A. Dumigan, Akron; Gary R. Lemmeyer, Sagamore Hills; Robert J. Warner, Jr., Akron, and Mary Ann Celestina-Krevh, Euclid, all of Ohio, assignors to Graco Children's Products Inc., Elverson, Pa.
Filed May 9, 2000, Appl. No. 122,989
Term of patent 14 years
LOC (7) Cl. 12 - *12*
U.S. Cl. D12—129

US D452,194 S
BABY STROLLER FRAME
Richard M. Stohr, Yakima, and Rene Garza, Toppenish, both of Wash., assignors to Racing Strollers, Inc., Yakima, Wash.
Filed Oct. 27, 2000, Appl. No. 131,827
Term of patent 14 years
LOC (7) Cl. 12 - *12*
U.S. Cl. D12—129

US D452,195 S
BABY STROLLER FRAME
Mary M. Baechler, Yakima, Wash., assignor to Racing Strollers, Inc., Yakima, Wash.
Filed Nov. 9, 2000, Appl. No. 132,502
Term of patent 14 years
LOC (7) Cl. 12 - *12*
U.S. Cl. D12—129

US D452,196 S
BABY BOTTLE HOLDER
Crystal L Pittman, and Ernest L Pittman, both of 904 Myra Ave., Yeadon, Pa. 19050
Filed Apr. 7, 2000, Appl. No. 121,486
Term of patent 14 years
LOC (7) Cl. 12 - *12*
U.S. Cl. D12—133

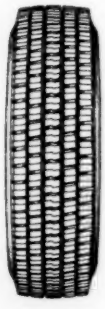


US D452,197 S
FORWARD FACING PORTION OF BABY STROLLER SEAT WITH SEAT BELT
Barbara C. Martin, and Shelly K. McWain, both of Yakima, Wash., assignors to Racing Strollers, Inc., Yakima, Wash.
Filed Sep. 26, 2000, Appl. No. 130,043
Term of patent 14 years
LOC (7) Cl. 12 - *12*
U.S. Cl. D12—133

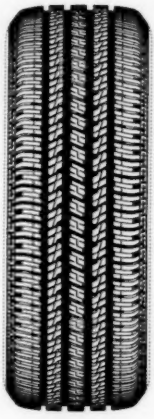
US D452,198 S
TIRE TREAD
Richard Heinen, Habay-la-Neuve, Belgium, and Georges Nicolas Hilbert, Moutfort, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 28, 2000, Appl. No. 133,341
Term of patent 14 years
LOC (7) Cl. 12 - *15*
U.S. Cl. D12—146

US D452,199 S
TIRE TREAD
Michel Pierre Charles Robert, Sibret, Belgium, and Philippe Jean Gerard De Coninck, Warken, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 24, 2001, Appl. No. 136,033
Term of patent 14 years
LOC (7) Cl. 12 - *15*
U.S. Cl. D12—146

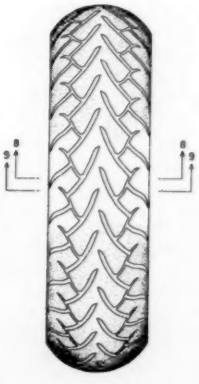
US D452,200 S
TIRE FOR WHEELS OF HEAVY VEHICLES
Luigi Campana, Milan, and Rodolfo Noto, Gorgonzola, both of Italy, assignors to Pirelli Pneumatici S.p.A., Milan, Italy
Filed Jan. 31, 2001, Appl. No. 136,338
Claims priority, application Hague Agreement, Jul. 31, 2000, DMA/005 004
Term of patent 14 years
LOC (7) Cl. 12 - *15*
U.S. Cl. D12—146



US D452,201 S
TIRE TREAD
John J. Regallis, Akron, and David A. Johnson, Wadsworth, both of Ohio, assignors to Bridgestone/Firestone Research, Inc., Akron, Ohio
Filed Mar. 8, 2001, Appl. No. 138,263
Term of patent 14 years
LOC (7) Cl. 12 - *15*
U.S. Cl. D12—147



US D452,202 S
TIRE FOR MOTORCYCLE
Yumiko Toyozawa, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed May 15, 2000, Appl. No. 123,260
Claims priority, application Japan, Nov. 25, 1999, 11-32704
Term of patent 14 years
LOC (7) Cl. 12 - *15*
U.S. Cl. D12—151



US D452,203 S

DECORATIVE SURFACE OF A TIRE SIDEWALL

Hidechika Kajikawa, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 21, 2000, Appl. No. 134,369
Claims priority, application Japan, Jun. 27, 2000, 12-017372
Term of patent 14 years
LOC (7) Cl. 12 - *15*
U.S. Cl. D12—152

US D452,204 S

DEER HEAD SHAPED BALL COVER FOR TRAILER HITCHES

Patrick J. Wrob, St. Clair, Mo., assignor to Rocking P Inc., St. Clair, Mo.

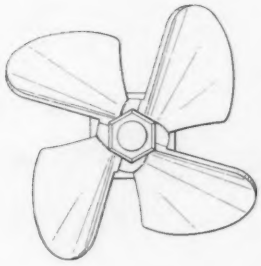
Filed Jun. 19, 2001, Appl. No. 143,722
Term of patent 14 years
LOC (7) Cl. 12 - *16*
U.S. Cl. D12—162

US D452,205 S

PROPELLER HITCH COVER

Kenneth D. Eisenbraun, Bloomfield Village, Mich., assignor to United Global Sourcing Inc., Troy, Mich.

Filed Jun. 20, 2001, Appl. No. 143,828
Term of patent 14 years
LOC (7) Cl. 12 - *16*
U.S. Cl. D12—162

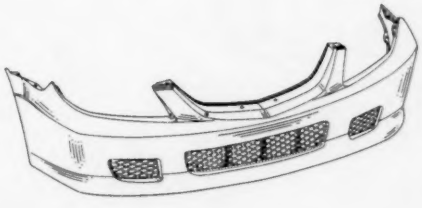


US D452,206 S

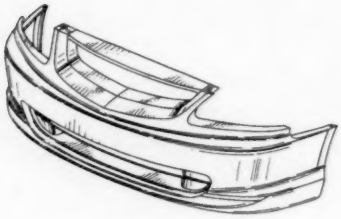
BUMPER OF MOTOR VEHICLE

Takeshi Fujii, and Tsuyoshi Toyoda, both of Aki-gun, Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

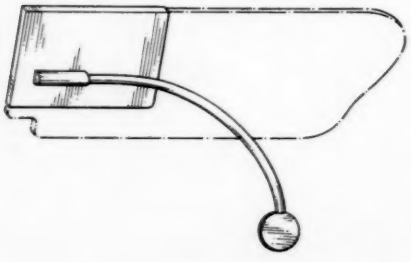
Filed Jan. 29, 2001, Appl. No. 136,216
Claims priority, application Japan, Sep. 11, 2000, 12-025298
Term of patent 14 years
LOC (7) Cl. 12 - *16*
U.S. Cl. D12—169



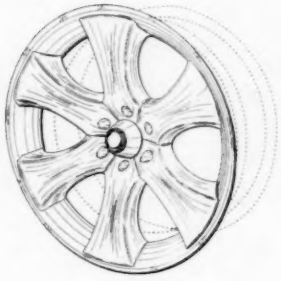
US D452,207 S
FRONT BUMPER FOR AN AUTOMOBILE
Noriyuki Ishii; Shinri Chibuka; Hajime Maniwa, and Katsumi Takahashi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 29, 2001, Appl. No. 139,338
Term of patent 14 years
LOC (7) Cl. 12 - *16*
U.S. Cl. D12—169



US D452,208 S
AUTOMOBILE SUN FILTER
J. Scott Headrick, 802-375 Brunswick Avenue, Toronto, Ontario, Canada, M5R 2Z3
Filed Jun. 6, 2001, Appl. No. 142,952
Term of patent 14 years
LOC (7) Cl. 12 - *16*
U.S. Cl. D12—191

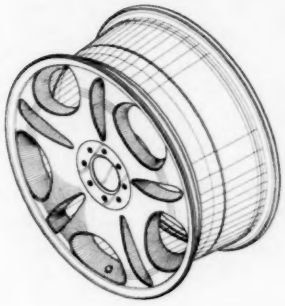


US D452,209 S
AUTOMOTIVE WHEEL
Suny Chung, Placentia, Calif., assignor to Synergies America Inc, Farmington Hills, Mich.
Filed Dec. 13, 1999, Appl. No. 115,338
Term of patent 14 years
LOC (7) Cl. 12 - *16*
U.S. Cl. D12—209



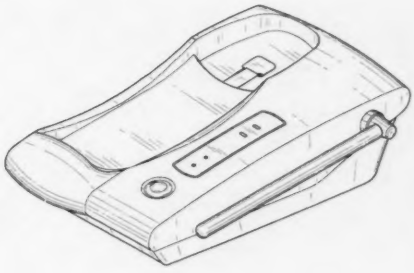
US D452,210 S
FRONT FACE OF A WHEEL
Claudio Bernoni, Podavo, Italy, assignor to O.Z. America, Inc., Miami, Fla.
Filed Mar. 19, 2001, Appl. No. 138,626
This patent is subject to a terminal disclaimer.
Term of patent 14 years
LOC (7) Cl. 12 - *16*
U.S. Cl. D12—209

US D452,211 S
VEHICLE WHEEL
Toshinori Takechi, Matsuyama, Japan, assignor to Takechi Project Co., Ltd., Japan
Filed Jul. 20, 2001, Appl. No. 145,330
Claims priority, application Japan, Apr. 19, 2001, 12-011353
Term of patent 14 years
LOC (7) Cl. 12 - *16*
U.S. Cl. D12—209

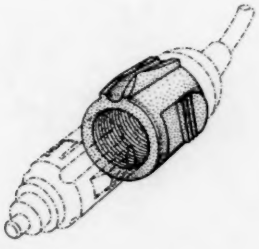


US D452,212 S
INNER TUBE VALVE STEM POSITIONER
Paul Davidoski, 31316 Via Colinas, Suite 113, Westlake Village, Calif. 91362
Filed Jan. 19, 2000, Appl. No. 117,154
Term of patent 14 years
LOC (7) Cl. 12 - *15*
U.S. Cl. D12—604

US D452,213 S
CHARGER FOR WIRELESS TELEPHONE
Koji Shindo; Yasuaki Isonaga, both of Tokyo, Japan, and Christopher Frank, Park Ridge, N.J., assignors to Sony Corporation, Tokyo, Japan
Filed May 27, 1999, Appl. No. 105,638
Claims priority, application China, Nov. 30, 1998, 98305726; Nov. 30, 1998, 98305735
Term of patent 14 years
LOC (7) Cl. 13 - *02*
U.S. Cl. D13—108



US D452,214 S
ADAPTER CONNECTOR
Clint Vieno, Londonderry, N.H.; Prasad Rao, Lowell, Mass.; William R. Manning, Littleton, Mass., and Arthur J. Blake, Jr., Leominster, Mass., assignors to American Power Conversion, West Kingston, R.I.
Filed Dec. 8, 2000, Appl. No. 133,887
Term of patent 14 years
LOC (7) Cl. 13 - *03*
U.S. Cl. D13—133



US D452,215 S

POWER STRIP

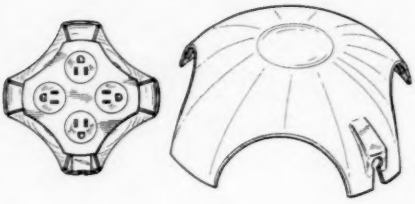
Albert Stekelenburg, Taipei, Taiwan, assignor to All Line Inc., Taipei, Taiwan

Filed Apr. 12, 2001, Appl. No. 140,033

Term of patent 14 years

LOC (7) Cl. 13 - *03*

U.S. Cl. D13—139.4



US D452,216 S

HOUSING FOR VARIABLE ELECTRIC POWER PROBE

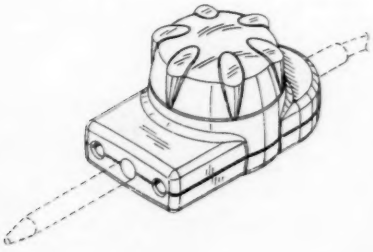
Michael S. Garman, Stafford, Va., assignor to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Va.

Filed Oct. 10, 2000, Appl. No. 130,831

Term of patent 14 years

LOC (7) Cl. 13 - *03*

U.S. Cl. D13—145



US D452,217 S

ELECTRICAL CONNECTING PLUG

Yasuhiro Shimojyo, Isesaki, Japan, assignor to Hosiden Corporation, Osaka-fu, Japan

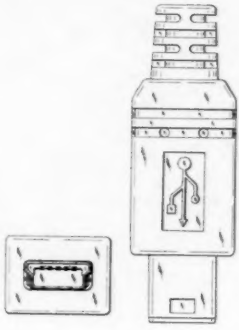
Filed Apr. 25, 2001, Appl. No. 140,716

Claims priority, application Japan, Nov. 15, 2000, 12-032624

Term of patent 14 years

LOC (7) Cl. 13 - *03*

U.S. Cl. D13—147



US D452,218 S

SET OF CABLES

Yousuke Imai, c/o Azumino Electronics Ltd., 6309-3 Matsukawa Village, kita-azumigun, Nagano, Japan

Filed Feb. 29, 2000, Appl. No. 119,402

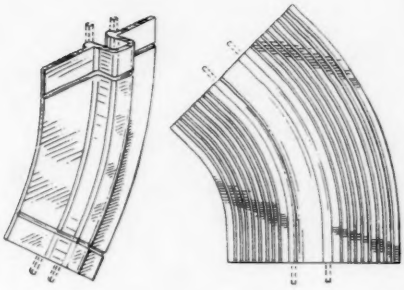
Claims priority, application Japan, Aug. 31, 1999, 11-23328

Term of patent 14 years

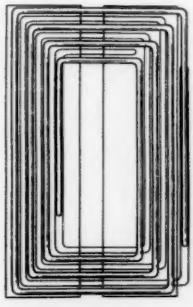
LOC (7) Cl. 13 - *03*

U.S. Cl. D13—153

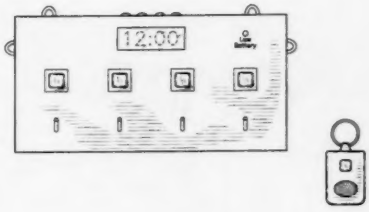
US D452,219 S
FIBER OPTIC 45 DEGREE CORNER
Joseph M. Koenig, Jr., Glenview, and Mark Budzik, Niles, both of Ill., assignors to Trim Tex, Inc., Lincolnwood, Ill.
Filed May 12, 2000, Appl. No. 123,200
Term of patent 14 years
LOC (7) Cl. 13 - *03*
U.S. Cl. D13—155



US D452,220 S
ARRANGEMENT OF ALUMINUM FOIL COILS FORMING AN INDUCTOR OF A RESONANT FREQUENCY IDENTIFICATION ELEMENT
David Robson, Crowborough, United Kingdom, assignor to Meto International GmbH, Hirschhorn, Germany
Division of application No. 29/103,482, filed on Apr. 15, 1999.
This application Jan. 31, 2001, Appl. No. 136,375.
Claims priority, application Germany, Oct. 15, 1998, 498 10 255
Term of patent 14 years
LOC (7) Cl. 13 - *03*
U.S. Cl. D13—182

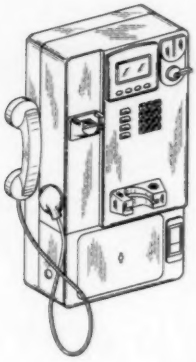


US D452,221 S
COMBINED KEY RACK AND LOCATOR
David A Garza, 338 Oak Glen, San Antonio, Tex. 78209
Filed May 19, 2000, Appl. No. 123,516
Term of patent 14 years
LOC (7) Cl. 13 - *99*
U.S. Cl. D13—184

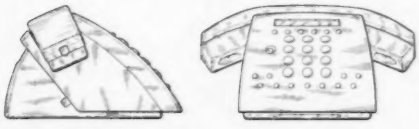


US D452,222 S
VIDEOPHONE
Soo Shin Lee, Kyungki-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea
Filed Jun. 6, 2000, Appl. No. 124,430
Claims priority, application Rep. of Korea, Dec. 6, 1999, 99-29412
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—130

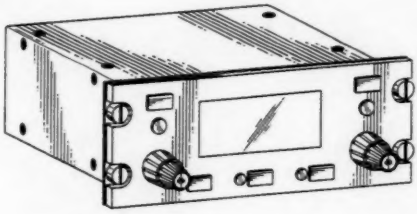
US D452,223 S
PAY TELEPHONE
Edward Ho, Marietta, Ga., assignor to OTC Telecom Corporation, Canton, Ga.
Filed Jul. 12, 2000, Appl. No. 126,284
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—146



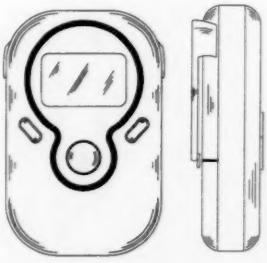
US D452,224 S
TELEPHONE
D. Juan Espino Sanchez, Madrid, Spain, assignor to Telefonica, S.A., Madrid, Spain
Filed Dec. 30, 1998, Appl. No. 98,529
Claims priority, application Spain, Jun. 30, 1998, 143111
This patent is subject to a terminal disclaimer.
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—150



US D452,225 S
RADIO REMOTE CONTROL UNIT
Roland Becker, Baden-Baden, Germany, assignor to Becker Flugfunkwerk GmbH, Rheinmünster, Germany
Filed Nov. 29, 1999, Appl. No. 114,638
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—155



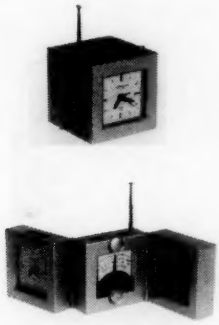
US D452,226 S
DIGITAL AUDIO PLAYER
Isaac A. Simpson, Milwaukie, Oreg.; Markus Diebel, San Francisco, and Paul Bradley, Redwood City, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Jan. 3, 2001, Appl. No. 134,965
Term of patent 14 years
LOC (7) Cl. 14 - *01*
U.S. Cl. D14—167



US D452,227 S
ALARM CLOCK WITH RADIO

Chuk Shun Chan, Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands

Filed Jun. 22, 2000, Appl. No. 125,340
Claims priority, application Hague Agreement, Dec. 22, 1999, DM/050 245
Term of patent 14 years
LOC (7) Cl. 14 - *01*
U.S. Cl. D14—170



US D452,228 S
RADIO RECEIVER

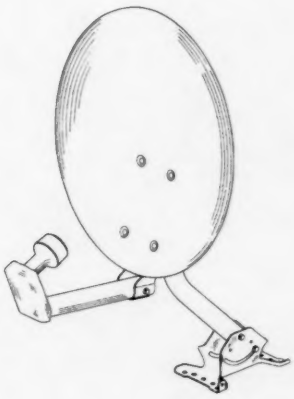
Michio Tanaka, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 6, 2001, Appl. No. 138,144
Claims priority, application Japan, Sep. 11, 2000, 12-025254
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—196

US D452,229 S
PARABOLIC ANTENNA

Fusao Sato, Hyogo-ken, Japan, assignor to DX Antenna Company, Limited, Kobe, Japan

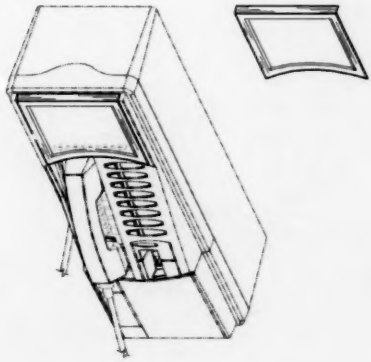
Filed Dec. 13, 2000, Appl. No. 134,025
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—231



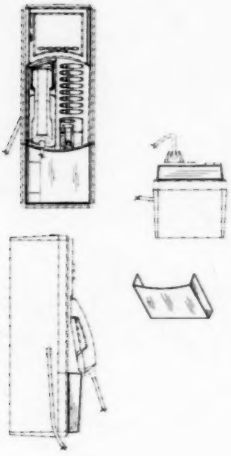
US D452,230 S
WALL PHONE COMPONENT

Darrell C. Taylor, Duluth, Ga.; Thomas Greenwood, Bradenton, Fla., and Matthew D. Toth, Lawrenceville, Ga., assignors to Elcotel, Inc., Sarasota, Fla.

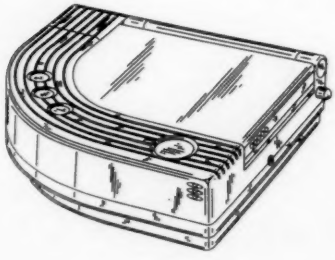
Filed Oct. 29, 1999, Appl. No. 113,078
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—240



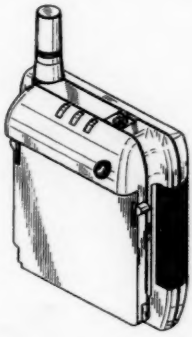
US D452,231 S
WALL PHONE COMPONENT
Darrell C. Taylor, Duluth, Ga.; Thomas Greenwood, Bradenton, Fla., and Matthew D. Toth, Lawrenceville, Ga., assignors to Elcotel, Inc., Sarasota, Fla.
Filed Oct. 29, 1999, Appl. No. 113,114
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—240



US D452,232 S
TRANSMITTER AND RECEIVER FOR VIDEO INCLUDING A CAMERA
Sigeki Hayasaka; Yoshiaki Ohta, and Yoshinao Segawa, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jan. 28, 2000, Appl. No. 117,484
Claims priority, application Japan, Jul. 30, 1999, 11-20564
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—240

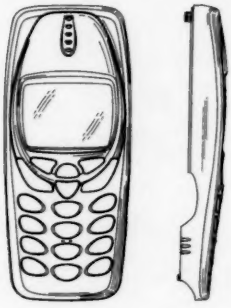


US D452,233 S
RF WIRELESS MODEM
Randy James Kubik, and David George Miller, both of Calgary, Canada, assignors to Novatel Wireless, Inc., San Diego, Calif.
Filed Nov. 21, 2000, Appl. No. 133,108
Term of patent 14 years
LOC (7) Cl. 14 - *01*
U.S. Cl. D14—242

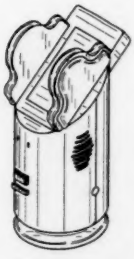


US D452,234 S
PUSH-BUTTON MATRIX
Rachel K. Russell, Hoover, Ala., and Christopher M. Arena, Duluth, Ga., assignors to BellSouth Intellectual Property Corporation
Continuation-in-part of application No. 29/062,628, filed on Nov. 20, 1996, now Pat. No. Des. 403,683. This application Dec. 8, 1998, Appl. No. 97,488.
This patent is subject to a terminal disclaimer.
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—247

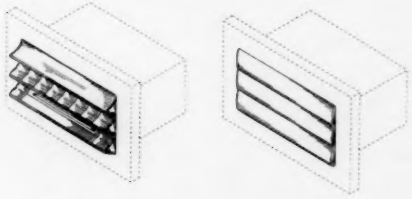
US D452,235 S
FRONT COVER FOR A HANDSET
Jamie Langford, Grapevine; Duncan Burns, Dallas, both of Tex., and Hanna Vuolteenaho, Copenhagen K, Denmark, assignors to Nokia Mobile Phones Ltd., Espoo, Finland
Filed Aug. 23, 2000, Appl. No. 128,362
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—248



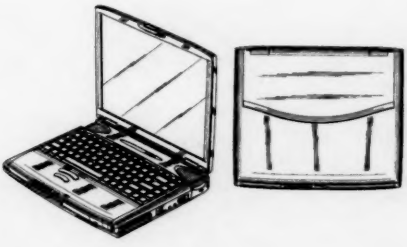
US D452,236 S
CUP-HOLDER SPEAKER PHONE
Paramjit Kohli, P.O. Box 270, Cranbourne Vic 3977, Australia
Filed Sep. 6, 2001, Appl. No. 147,795
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—253



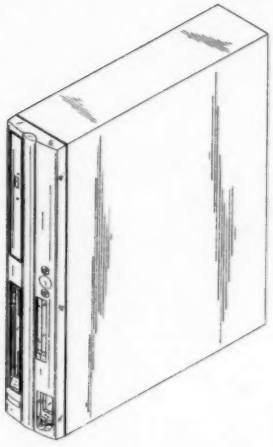
US D452,237 S
FRONT PANEL FOR AN IN-CAR ENTERTAINMENT SYSTEM
David Lewis, København, Denmark, assignor to Bang & Olufsen A/S, Struer, Denmark
Filed Mar. 19, 2001, Appl. No. 138,727
Claims priority, application Denmark, Sep. 21, 2000, MA 2000 01024
Term of patent 14 years
LOC (7) Cl. 14 - *99*
U.S. Cl. D14—258



US D452,238 S
ELECTRONIC COMPUTER
Yoshihiko Sugano, Tokyo, Japan; Kenji Shimano, Irvine, Calif., and Motoyuki Suzuki, Funabashi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 27, 2000, Appl. No. 125,612
Claims priority, application Japan, Dec. 27, 1999, 11-36950
Term of patent 14 years
LOC (7) Cl. 14 - *02*
U.S. Cl. D14—322

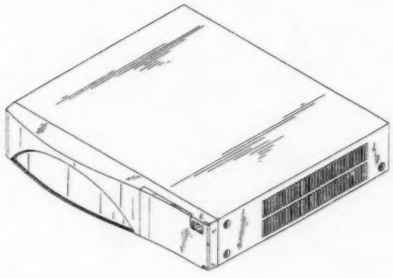


US D452,239 S
PERSONAL COMPUTER
Yoshimasa Kitayama, Gunma, and Hiroki Ide, Tokyo, both of Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Dec. 14, 2000, Appl. No. 134,062
Claims priority, application Japan, Jun. 15, 2000, 12-016293
Term of patent 14 years
LOC (7) Cl. 14 - *02*
U.S. Cl. D14—349

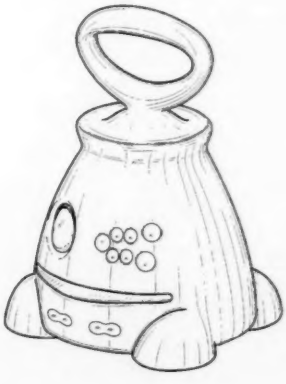


US D452,240 S
PERSONAL COMPUTER
Byung Mu Huh, and Bo Hyun Nam, both of Seoul, Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea
Filed Nov. 22, 2000, Appl. No. 133,908
Claims priority, application Rep. of Korea, May 23, 2000, 00-13338
Term of patent 14 years
LOC (7) Cl. 14 - *02*
U.S. Cl. D14—351

US D452,241 S
IMAGE COMPRESSION TRANSMISSION CONTROL EQUIPMENT
Yasuhiro Kitajima; Sadaaki Miyamoto; Ou Matsumoto, and Tsuneo Shimada, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Dec. 1, 2000, Appl. No. 133,452
Claims priority, application Japan, Aug. 8, 2000, 2000-021847
Term of patent 14 years
LOC (7) Cl. 14 - *02*
U.S. Cl. D14—358



US D452,242 S
PORTABLE DISPLAY DEVICE
Paul Steven Haney, Noblesville, Ind., assignor to Thomson Licensing S.A., Boulogne-Cedex, France
Filed Jan. 5, 2000, Appl. No. 116,493
Term of patent 14 years
LOC (7) Cl. 14 - *02*
U.S. Cl. D14—371



US D452,243 S

INTEGRATED CIRCUIT MEMORY CARD

Robert F. Wallace, Sunnyvale, Calif., assignor to SanDisk Corporation, Sunnyvale, Calif.

Filed Jun. 7, 2000, Appl. No. 124,606

Term of patent 14 years

LOC (7) Cl. 14 - *02*

U.S. Cl. D14—436

US D452,244 S

PORTABLE MEMORY CARD FOR STORAGE OF PERSONAL INFORMATION

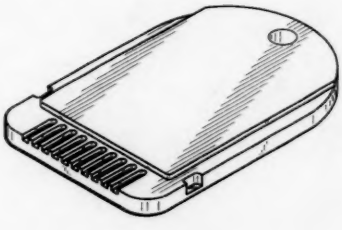
Robert F. Wallace, Sunnyvale, and Robert C. Miller, San Jose, both of Calif., assignors to SanDisk Corporation, Sunnyvale, Calif.

Division of application No. 29/109,687, filed on Aug. 19, 1999, now Pat. No. Des. 442,598. This application May 4, 2001, Appl. No. 141,365.

Term of patent 14 years

LOC (7) Cl. 14 - *02*

U.S. Cl. D14—436



US D452,245 S

PORTABLE MEMORY CARD FOR STORAGE OF PERSONAL INFORMATION

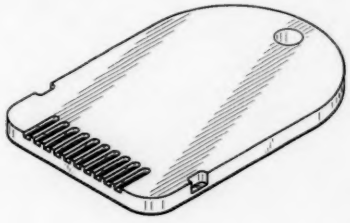
Robert F. Wallace, Sunnyvale, and Robert C. Miller, San Jose, both of Calif., assignors to SanDisk Corporation, Sunnyvale, Calif.

Division of application No. 29/109,687, filed on Aug. 19, 1999, now Pat. No. Des. 442,598. This application May 4, 2001, Appl. No. 141,407.

Term of patent 14 years

LOC (7) Cl. 14 - *02*

U.S. Cl. D14—436



US D452,246 S

PORTABLE MEMORY CARD FOR STORAGE OF PERSONAL INFORMATION

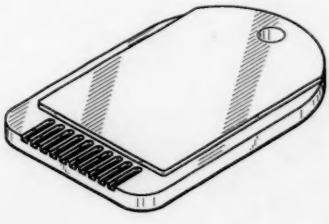
Robert F. Wallace, Sunnyvale, and Robert C. Miller, San Jose, both of Calif., assignors to SanDisk Corporation, Sunnyvale, Calif.

Division of application No. 29/109,687, filed on Aug. 19, 1999, now Pat. No. Des. 442,598. This application May 4, 2001, Appl. No. 141,416.

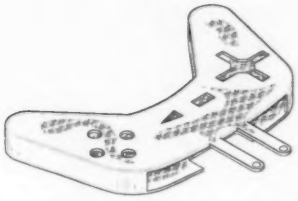
Term of patent 14 years

LOC (7) Cl. 14 - *02*

U.S. Cl. D14—436

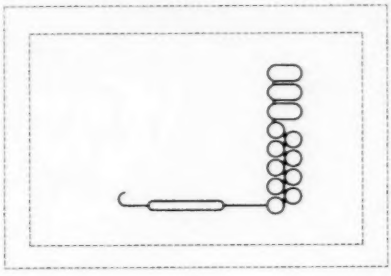


US D452,247 S
GAME PAD COVER
Frank B Flynn, 3510 Ridge Rd., Island Lake, Ill. 60042
Filed Sep. 29, 2000, Appl. No. 130,352
Term of patent 14 years
LOC (7) Cl. 21 - *01*
U.S. Cl. D14—454

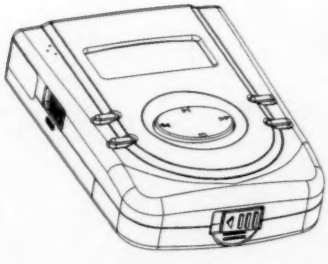


US D452,248 S
MOUSE PAD CALCULATOR WITH WRIST REST
Robert Shu Keung Li, 1455 Monterey Pass Rd., Suite 102, Monterey Park, Calif. 91754
Filed Jan. 31, 2001, Appl. No. 136,470
Term of patent 14 years
LOC (7) Cl. 14 - *02*
U.S. Cl. D14—458

US D452,249 S
COMPUTER GENERATED IMAGE FOR DISPLAY PANEL OR SCREEN
Kei Fukuda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 27, 2000, Appl. No. 126,877
Term of patent 14 years
LOC (7) Cl. 14 - *02*
U.S. Cl. D14—485



US D452,250 S
MP3 PLAYER
Ching Chan, Taipei, Taiwan, assignor to Perfect Union Co., Ltd., Taipei, Taiwan
Filed Dec. 6, 2000, Appl. No. 133,734
Term of patent 14 years
LOC (7) Cl. 14 - *03*
U.S. Cl. D14—496



US D452,251 S

OUTBOARD MOTOR

Hisashi Okamoto, Hamamatsu, Japan, assignor to Suzuki Motor Corporation, Hamamatsu, Japan

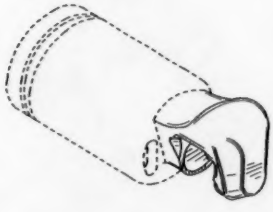
Filed Jan. 5, 2001, Appl. No. 135,194
Claims priority, application Japan, Jul. 21, 2000, 12-020075
Term of patent 14 years
LOC (7) Cl. 15 - *01*
U.S. Cl. D15—4

US D452,252 S

PISTON FOR REFRIGERANT COMPRESSOR

Kiyoshi Miyazawa, Annaka, and Mitsuhiro Takashima, Nitta-gun, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Jun. 20, 2000, Appl. No. 125,169
Claims priority, application Japan, Dec. 20, 1999, 11-35057
This patent is subject to a terminal disclaimer.
Term of patent 14 years
LOC (7) Cl. 15 - *02*
U.S. Cl. D15—9

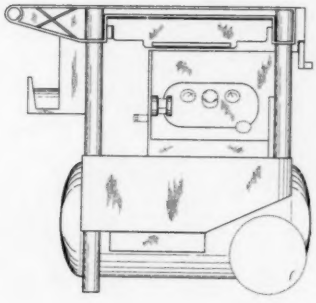


US D452,253 S

COMPRESSOR

Mark R. Matthew, New Ulm, Minn.; David McCoy, Oswego, Ill.; Tom Graber, New Ulm, Minn.; Richard Hawkes, Naperville, Ill.; Keith Kristiansen, Statford, Conn.; John Kiely, Morris Plains, N.J.; Gary Grossman, Riverside, Conn., and Thomas C. Vandyk, Ramsey, N.J., assignors to Coleman Powermate, Inc., Kearney, Nebr.

Filed Jul. 12, 2000, Appl. No. 126,296
Term of patent 14 years
LOC (7) Cl. 15 - *02*
U.S. Cl. D15—9

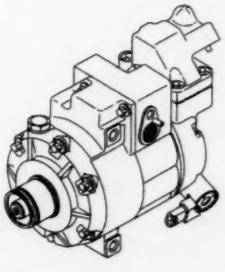


US D452,254 S

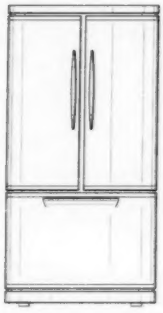
COMPRESSOR FOR A VEHICLE AIR CONDITIONER

Masahiro Kawaguchi; Masanori Sonobe; Ken Suitou; Tetsuhiko Fukanuma, and Osamu Hiramatsu, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

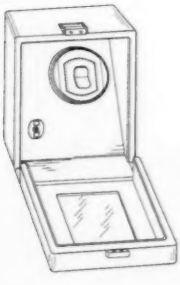
Division of application No. 29/079,258, filed on Nov. 10, 1997, now Pat. No. Des. 441,377. This application Nov. 28, 2000, Appl. No. 133,317.
Term of patent 14 years
LOC (7) Cl. 15 - *02*
U.S. Cl. D15—9



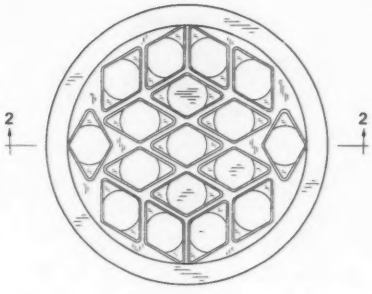
US D452,255 S
FREEZER WITH DRAWER BELOW
Yongsen Chai; Jian Ma; Biao Li, and Dinghua Wang, all of Qingdao, China, assignors to Haier Group Corporation, and Quingdao Haier Icebox Co., Ltd., both of Qingdao, China
Filed Mar. 2, 2001, Appl. No. 137,876
Claims priority, application China, Feb. 16, 2001, 01316560
Term of patent 14 years
LOC (7) Cl. 15 - *07*
U.S. Cl. D15—85



US D452,256 S
AUTOMATIC WATCH ROTATOR BOX
Simon Wolf, Malibu, Calif., assignor to Wolf Designs, Inc., Malibu, Calif.
Filed Mar. 15, 2001, Appl. No. 138,642
Term of patent 14 years
LOC (7) Cl. 15 - *99*
U.S. Cl. D15—199



US D452,257 S
EXTRUDER PLATE FOR DIAMOND SHAPED EXTRUDER INSERT
James M. Pinchot, Parma, Ohio, assignor to J M P Industries, Inc., Cleveland, Ohio
Filed Jul. 25, 2001, Appl. No. 145,563
Term of patent 14 years
LOC (7) Cl. 15 - *09*
U.S. Cl. D15—199



US D452,258 S
BINOCULARS
Akira Nojima, Fussa, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Apr. 2, 2001, Appl. No. 139,471
Claims priority, application Japan, Dec. 25, 2000, 12-036828
Term of patent 14 years
LOC (7) Cl. 16 - *06*
U.S. Cl. D16—133

US D452,259 S
CAMERA

Wai-Lam Choi, Tsuen Wan, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Timelex International Limited, Hong Kong, The Hong Kong Special Administrative Region of the People's Republic of China

Filed Jul. 2, 1999, Appl. No. 107,233
Term of patent 14 years
LOC (7) Cl. 16 - *01*
U.S. Cl. D16—202

US D452,260 S
INTEGRATED HAND GRIP/BATTERY COVER FOR A DIGITAL CAMERA

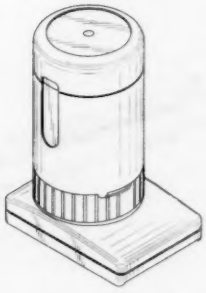
Robin Goran Petravic; Kurt Dammermann, both of San Francisco, and Eric O. Bodnar, Santa Cruz, all of Calif., assignors to LightSurf Technologies, Inc., Santa Cruz, Calif.

Filed Feb. 16, 2001, Appl. No. 137,309
Term of patent 14 years
LOC (7) Cl. 16 - *05*
U.S. Cl. D16—243

US D452,261 S
CHANGEABLE CHARACTER STAMP

Shiro Hayashi, Nagoya, Japan, assignor to Shachihata Inc., Nagoya, Japan

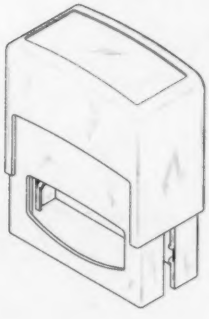
Filed Aug. 16, 1999, Appl. No. 109,329
Term of patent 14 years
LOC (7) Cl. 19 - *02*
U.S. Cl. D18—15



US D452,262 S
HAND STAMP

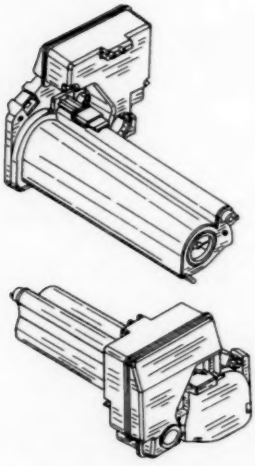
Anthony D. MacNeil, Piscataway, and Steven J. Sculler, Morganville, both of N.J., assignors to M&R Marking Systems, Inc., Piscataway, N.J.

Continuation-in-part of application No. 29/120,703, filed on Mar. 24, 2000. This application Jun. 1, 2001, Appl. No. 142,779.
Term of patent 14 years
LOC (7) Cl. 19 - *02*
U.S. Cl. D18—15

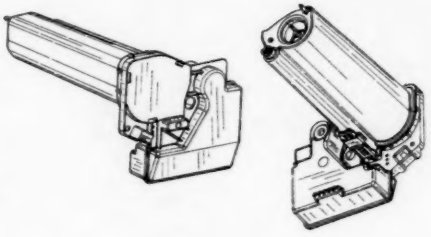


US D452,263 S
PHOTOSENSITIVE DRUM CARTRIDGE FOR AN ELECTRONIC COPYING MACHINE
Noriki Ono, Higashiyamato; Moriyuki Kouroku, Higashimurayama, and Kouichi Kamei, Hino, all of Japan, assignors to Casio Computer Co., Ltd., and Casio Electronics Manufacturing Co., Ltd., both of Tokyo, Japan
Filed Nov. 15, 2000, Appl. No. 132,768
Term of patent 14 years
LOC (7) Cl. 16 - *03*
U.S. Cl. D18—40

US D452,264 S
TONER CARTRIDGE
Akira Sato; Tadao Kamano, both of Tagata-gun, and Hisashi Kimura, Kawasaki, all of Japan, assignors to Toshiba Tec Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 30, 2000, Appl. No. 128,798
Term of patent 14 years
LOC (7) Cl. 16 - *03*
U.S. Cl. D18—43



US D452,265 S
TONER CARTRIDGE
David Victor, Mitchell, S. Dak., assignor to Toshiba Tec Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 30, 2000, Appl. No. 128,834
Term of patent 14 years
LOC (7) Cl. 16 - *03*
U.S. Cl. D18—43



US D452,266 S
POSTAGE METER DEVICE
William A. Weirsman, Orange, and Allen A. Crowe, Prospect, both of Conn., assignors to Ascom Hasler Mailing Systems, Inc., Shelton, Conn.
Filed May 2, 2000, Appl. No. 122,694
Term of patent 14 years
LOC (7) Cl. 18 - *02*
U.S. Cl. D18—51

US D452,267 S

EXPANDABLE ENVELOPE WITH A CLOSURE FLAP

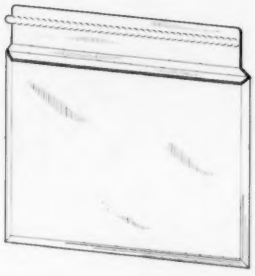
Marvin A Makofsky, Sand Point, and Jerome B Schwartz, Mineola, both of N.Y., assignors to Pama Enterprises, Inc., New York, N.Y.

Filed Feb. 7, 2000, Appl. No. 118,364

Term of patent 14 years

LOC (7) Cl. 19 - *01*

U.S. Cl. D19—3



US D452,268 S

QUARTER COLLECTOR'S BOOK

Ken J Seely, 3696 Gold Ridge Dr., Magna, Utah 84044

Filed Oct. 13, 2000, Appl. No. 131,017

Term of patent 14 years

LOC (7) Cl. 19 - *04*

U.S. Cl. D19—26

US D452,269 S

ADDRESS BOOK

Gia Cuong Tu, Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands

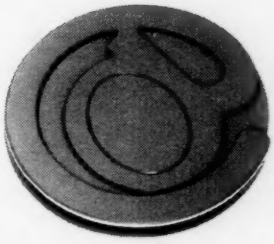
Filed Oct. 17, 2000, Appl. No. 131,252

Claims priority, application Hague Agreement, Apr. 17, 2000, DM/052 136

Term of patent 14 years

LOC (7) Cl. 19 - *04*

U.S. Cl. D19—28



US D452,270 S

COMBINATION PEN AND BOOKMARK

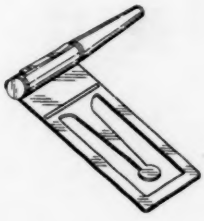
Randolph J. Mershon, 300 Winston Dr., Cliffside Park, N.J. 07010

Filed May 16, 2001, Appl. No. 141,958

Term of patent 14 years

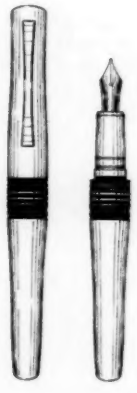
LOC (7) Cl. 19 - *06*

U.S. Cl. D19—36



US D452,271 S
WRITING INSTRUMENT
Kurt J. Owen, Aurora, Ill., and Marc Ian Drucker, Brighton, Mass., assignors to Sanford, Bellwood, Ill.
Filed Aug. 24, 2000, Appl. No. 128,421
Term of patent 14 years
LOC (7) Cl. 19 - *06*
U.S. Cl. D19—43

US D452,272 S
FOUNTAIN PEN
Juliette Bonnamour, Paris, France, assignor to Kabushiki Kaisha Pilot, Tokyo, Japan
Filed Mar. 26, 2001, Appl. No. 139,092
Claims priority, application Japan, Sep. 25, 2000, 12-026714
Term of patent 14 years
LOC (7) Cl. 19 - *06*
U.S. Cl. D19—43



US D452,273 S
PEN ROLLER FOR HIGHLIGHTING, OR FOR APPLYING CORRECTION FLUID OR ADHESIVE MATERIAL
Stephan Blom, Helmond; Markus F. Brouwer, Heesch, and Erwin P. Boes, Nijmegen, all of Netherlands, assignors to Manco, Inc., Avon, Ohio
Division of application No. 29/117,120, filed on Jan. 18, 2000. This application Jun. 21, 2001, Appl. No. 143,895.
Claims priority, application WIPO, Jul. 15, 1999, DMA/004599
Term of patent 14 years
LOC (7) Cl. 19 - *06*
U.S. Cl. D19—46

US D452,274 S
WRITING INSTRUMENT
Tadashi Keda, Kawagoe, Japan, assignor to Kotobuki & Co., LTD, Kyoto, Japan
Division of application No. 29/137,204, filed on Feb. 16, 2001. This application Jun. 12, 2001, Appl. No. 143,284.
Claims priority, application Japan, Aug. 19, 2000, 12-26585
Term of patent 14 years
LOC (7) Cl. 19 - *06*
U.S. Cl. D19—51

US D452,275 S

FAN-FOLDED PAD HOLDER WITH WALL CLIP AND PEN HOLDER

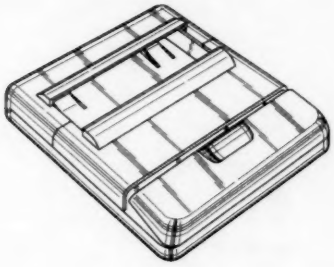
Boman K Najmi, Crofton, Md., assignor to BHS International, Inc., Crofton, Md.

Filed Nov. 30, 2000, Appl. No. 133,411

Term of patent 14 years

LOC (7) Cl. 19 - *06*

U.S. Cl. D19—78



US D452,276 S

NOTEPAD HOLDER

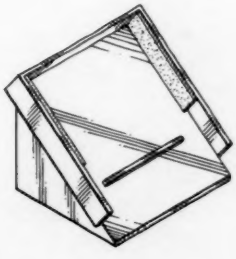
Trevor Hurwitz, Dept. of Psychiatry, UBC Hospital, 2255 Wesbrook Mall, Vancouver, British Columbia, Canada, V6T 2A1

Filed Mar. 20, 2000, Appl. No. 120,359

Term of patent 14 years

LOC (7) Cl. 19 - *02*

U.S. Cl. D19—86



US D452,277 S

PAD HOLDER FOR PAPER PAD HAVING RELEASABLE SHEETS

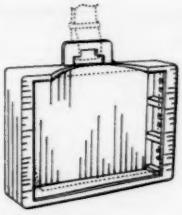
Jodie C. Anderson, 2709 Conant Ct., Geneva, Ill. 60134

Filed Mar. 13, 2000, Appl. No. 120,105

Term of patent 14 years

LOC (7) Cl. 19 - *02*

U.S. Cl. D19—90



US D452,278 S

SIGN

Daniel Paul Shantz, and Steven Leonard Shantz, both of 16900 Cicero Ave., Tinley Park, Ill. 60477

Filed Nov. 3, 2000, Appl. No. 132,156

Term of patent 14 years

LOC (7) Cl. 19 - *08*

U.S. Cl. D20—11

US D452,279 S

SIGN

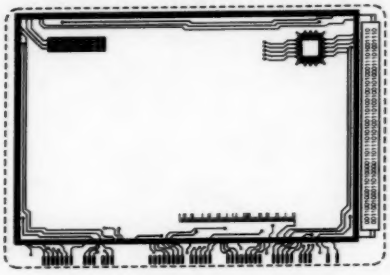
Daniel Paul Shantz, and Steven Leonard Shantz, both of 16900 Cicero Ave., Tinley Park, Ill. 60477

Filed Nov. 3, 2000, Appl. No. 132,157

Term of patent 14 years

LOC (7) Cl. 19 - *08*

U.S. Cl. D20—11



US D452,280 S

HAND-HELD ELECTRONIC GAME MACHINE

Masahiko Ota, and Kenichi Sugino, both of Kyoto, Japan, assignors to Nintendo Co., Ltd., Japan

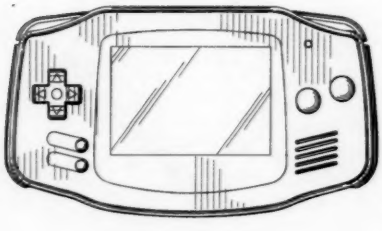
Filed Jul. 19, 2000, Appl. No. 126,506

Claims priority, application Japan, Jan. 21, 2000, 12-000673; Jan. 21, 2000, 12-000675; Jan. 21, 2000, 12-000676; Jan. 21, 2000, 12-000677; Jan. 21, 2000, 12-000678; Jan. 21, 2000, 12-000679; Jan. 21, 2000, 12-000680; Jan. 21, 2000, 12-000681

Term of patent 14 years

LOC (7) Cl. 21 - *01*

U.S. Cl. D21—329



US D452,281 S

MEMORY CARTRIDGE FOR ELECTRONIC GAME MACHINE

Takashi Ohno, Kanazawa, Japan, assignor to Nintendo Co., Ltd., Japan

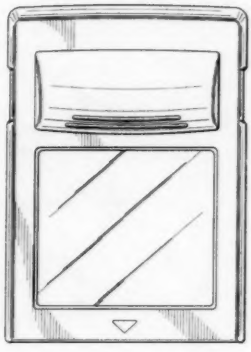
Filed Oct. 31, 2000, Appl. No. 131,913

Claims priority, application Japan, May 2, 2000, 12-011827; May 2, 2000, 12-011828; May 2, 2000, 12-011829; May 2, 2000, 12-011830; May 2, 2000, 12-011831; May 2, 2000, 12-011832

Term of patent 14 years

LOC (7) Cl. 21 - *07*

U.S. Cl. D21—332



US D452,282 S

PORTION OF AN ELECTRONIC HOUSING

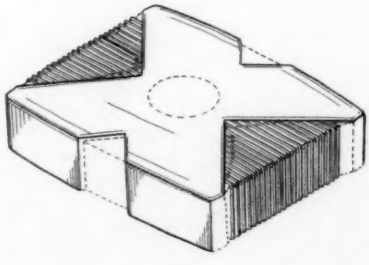
James R. Stewart, Woodinville, and Hok-Sum Horace Luke, Mercer Island, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jan. 11, 2001, Appl. No. 135,335

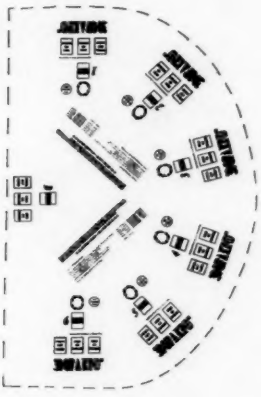
Term of patent 14 years

LOC (7) Cl. 21 - *01*

U.S. Cl. D21—333

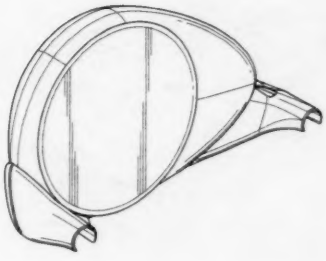


US D452,283 S
ORNAMENTAL SURFACE PATTERN FOR A CASINO CARD GAME
John Charles Regan, II; Ann Elizabeth Regan, both of 23863 N. 36th Dr., Glendale, Ariz. 85310; Joseph James Cantrell, and Kelly Ann Cantrell, both of 1819 W. Joy Ranch Rd., Desert Hills, Ariz. 85086
Filed May 16, 2000, Appl. No. 123,854
Term of patent 14 years
LOC (7) Cl. 21 - *01*
U.S. Cl. D21—369



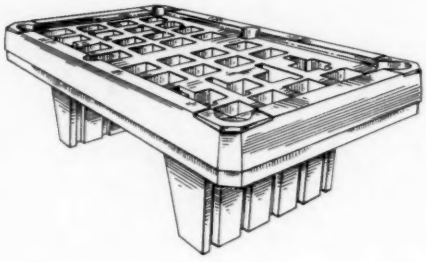
US D452,284 S
SCOOTER
Kevin J. McGinnis, 9005 Oak Ave., Orangevale, Calif. 95662
Filed Nov. 20, 2000, Appl. No. 132,970
Term of patent 14 years
LOC (7) Cl. 21 - *01*
U.S. Cl. D21—423

US D452,285 S
SHROUD FOR ELLIPTICAL EXERCISER
James B. Easley, Orono, Minn., assignor to Fitness Quest Inc., Canton, Ohio
Filed Jan. 19, 2001, Appl. No. 135,843
Term of patent 14 years
LOC (7) Cl. 21 - *02*
U.S. Cl. D21—697

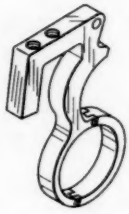


US D452,286 S
STRIKEPAL SOCCER BALL
Tina Amason, Mansfield, Tex., assignor to Vidpro International, Inc., Carrollton, Tex.
Filed Mar. 6, 2001, Appl. No. 138,108
Term of patent 14 years
LOC (7) Cl. 21 - *02*
U.S. Cl. D21—714

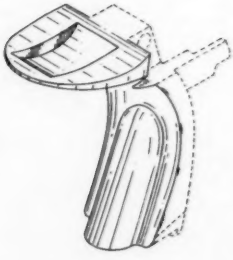
US D452,287 S
INTEGRALLY MOLDED, POOL TABLE STRUCTURE WITH A PERFORATED ARRAY SURFACE
Timothy B. Henry, 139 Woodduck Dr., Sanger, Calif. 93657
Filed Mar. 2, 2001, Appl. No. 138,012
Term of patent 14 years
LOC (7) Cl. 06 - *03*
U.S. Cl. D21—784



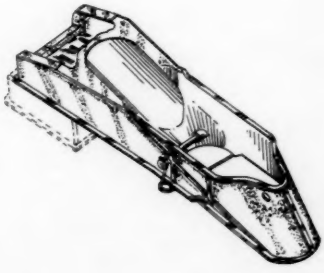
US D452,289 S
GUN TRIGGER
Thomas J. Kutrubes, Longmont, Colo., assignor to K&K Performance Paintball, Longmont, Colo.
Continuation of application No. 09/432,825, filed on Nov. 2, 1999, now Pat. No. 6,189,525. This application Nov. 30, 1999, Appl. No. 114,774.
Term of patent 14 years
LOC (7) Cl. 22 - *01*
U.S. Cl. D22—108



US D452,288 S
POSI-ACTION BEAVERTAIL GRIP SAFETY
Ira M. Kay, 405 Winchester St., Warrenton, Va. 20186
Filed Apr. 30, 1999, Appl. No. 104,225
Term of patent 14 years
LOC (7) Cl. 22 - *01*
U.S. Cl. D22—108



US D452,290 S
ONE-PIECE GUN BOOT BRACKET
Ronald N. Kolpin, 9380 Ladwig La., Berlin, Wis. 54923
Filed Nov. 13, 2000, Appl. No. 132,695
Term of patent 14 years
LOC (7) Cl. 22 - *01*
U.S. Cl. D22—108



US D452,291 S

FISHING JIG

Joseph A. Puccio, Madison, Wis., assignor to Bait Rigs Tackle Company, Madison, Wis.

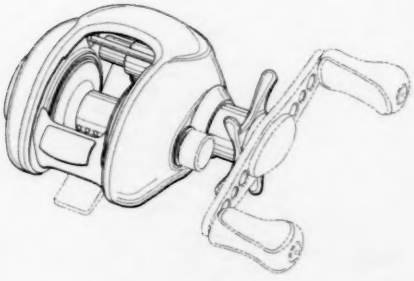
Filed Jun. 2, 2000, Appl. No. 124,339
Term of patent 14 years
LOC (7) Cl. 22 - *05*
U.S. Cl. D22—126

US D452,292 S

BAITCAST FISHING REEL

Hyunkyu Kim; Robert D. Bagby, both of Broken Arrow, Okla., and Richard J. Robbins, Derby, Kans., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Aug. 30, 2000, Appl. No. 128,762
Term of patent 14 years
LOC (7) Cl. 22 - *05*
U.S. Cl. D22—140



US D452,293 S

ADVERTISING STRUCTURE OR THE LIKE

Donald F. Olson, 13444 Jonquil St. Northwest, Andover, Minn. 55304

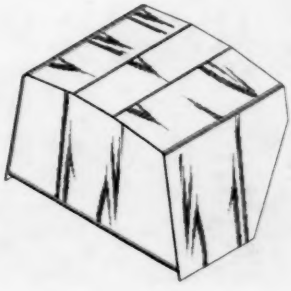
Filed Nov. 27, 2000, Appl. No. 133,194
Term of patent 14 years
LOC (7) Cl. 22 - *05*
U.S. Cl. D22—144

US D452,294 S

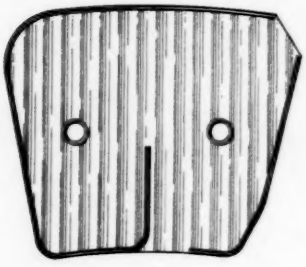
HYDRAULIC FLUID TANK

Duane A. Harthoorn, 13762 Highway 225 E., Lynnville, Iowa 50193, and Fred H. Lucas, 23877 220th Ave., Sigourney, Iowa 52591

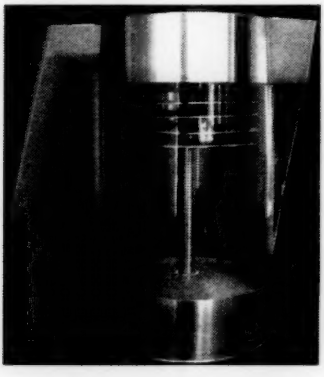
Filed Jun. 22, 2000, Appl. No. 125,472
Term of patent 14 years
LOC (7) Cl. 23 - *01*
U.S. Cl. D23—202



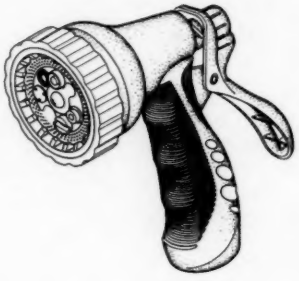
US D452,295 S
PLATE FOR A WASTEWATER TREATMENT PLANT
Donald D. Ricketts, Monterey, Va., assignor to Wastewater Technology, Inc., Monterey, Va.
Filed Jan. 17, 2001, Appl. No. 135,661
Term of patent 14 years
LOC (7) Cl. 23 - *01*
U.S. Cl. D23—207



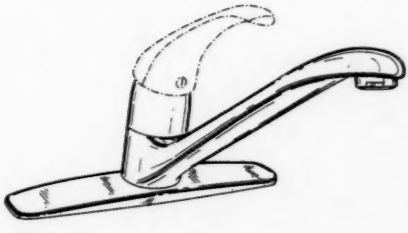
US D452,296 S
POT FOR WATER PURIFICATION
Johanna Egnell, and Helena Bodin, both of Stockholm, Sweden, assignors to HVR Water Purification AB, Stockholm, Sweden
Filed Nov. 22, 2000, Appl. No. 133,069
Claims priority, application Sweden, May 22, 2000, 00-0985
Term of patent 14 years
LOC (7) Cl. 23 - *01*
U.S. Cl. D23—209



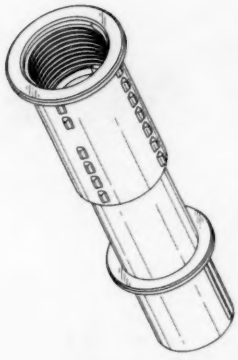
US D452,297 S
WATER SPRAYER
Hui-Chen Chao, 75, Liau Tsuo Hsiang, Liau Tsuo Li, Lu Kang Chen, Chang Hua Hsien, Taiwan
Filed Feb. 2, 2001, Appl. No. 136,511
Term of patent 14 years
LOC (7) Cl. 23 - *01*
U.S. Cl. D23—226



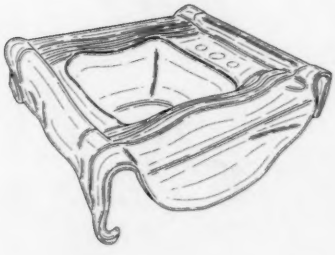
US D452,298 S
FAUCET BODY AND ESCUTCHEON
Wolfgang Fabian, Mannheim, Germany; John Hyde, Flemington, N.J., and Albert Becker, Wittlich-Lüxem, Germany, assignors to American Standard, Inc., Piscataway, N.J.
Division of application No. 29/062,178, filed on Nov. 8, 1996. This application May 7, 1998, Appl. No. 87,650.
Term of patent 14 years
LOC (7) Cl. 23 - *02*
U.S. Cl. D23—241



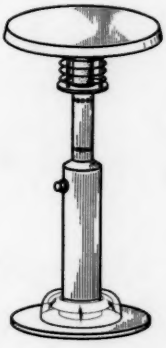
US D452,299 S
THREADED COLLET ASSEMBLY
Jeff Aldred, Boulder, and Brian Hunter, Nederland, both of Colo., assignors to American Standard International Inc., New York, N.Y.
Filed Apr. 5, 2000, Appl. No. 121,389
Term of patent 14 years
LOC (7) Cl. 23 - *01*
U.S. Cl. D23—259



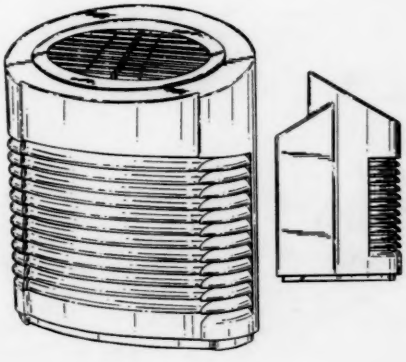
US D452,300 S
SINK
Sherry Lynn Jones, Pataskala, Ohio, assignor to American Standard International Inc., New York, N.Y.
Filed Apr. 4, 2000, Appl. No. 121,327
Term of patent 14 years
LOC (7) Cl. 23 - *02*
U.S. Cl. D23—284



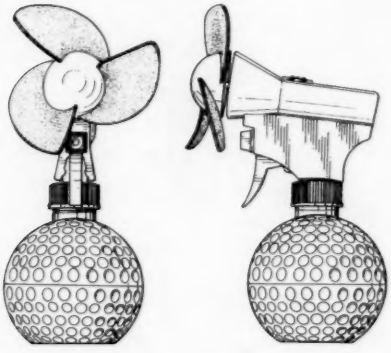
US D452,301 S
COMBINATION UNIT FOR HEATING, LIGHTING AND DEBUGGING AN AREA
Daniel Schwartz, 387 Huron #3, Cambridge, Mass. 02138; Sam Tsao, Room 101, Shiu Fung Hong Building, 239-241 Wing Lok Street, Sheung Wan, The Hong Kong Special Administrative Region of the People's Republic of China, and John Schwartz, 196 Solana Point Cir., Solana Beach, Calif. 92075
Filed Apr. 13, 2001, Appl. No. 140,206
Term of patent 14 years
LOC (7) Cl. 23 - *03*
U.S. Cl. D23—328



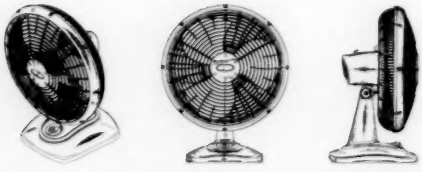
US D452,302 S
AIR FILTER
R. Sean Hagen, Winter Park, Fla., assignor to Dart Industries Inc., Orlando, Fla.
Filed Feb. 14, 2000, Appl. No. 118,590
Term of patent 14 years
LOC (7) Cl. 23 - *04*
U.S. Cl. D23—365



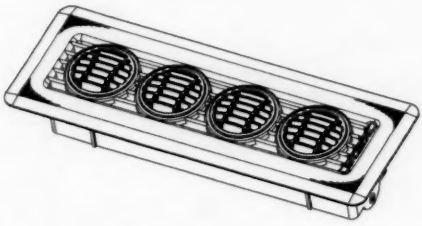
US D452,303 S
GOLF BALL SPORTS PORTABLE FAN
Gregory A. Steiner, 7 S. 550 Donwood Dr., Naperville, Ill. 60567
Filed Aug. 29, 2000, Appl. No. 128,657
This patent is subject to a terminal disclaimer.
Term of patent 14 years
LOC (7) Cl. 23 - *04*
U.S. Cl. D23—379



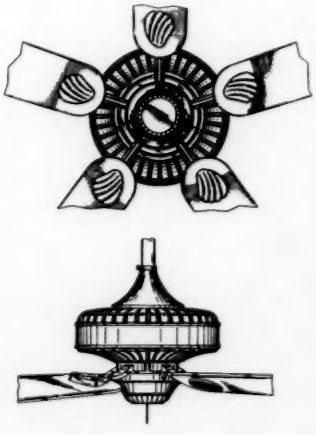
US D452,304 S
OSCILLATING FAN
Barry Shapiro, Doylestown, Pa., assignor to Lasko Holdings, Inc, West Chester, Pa.
Filed Apr. 9, 2001, Appl. No. 139,866
Term of patent 14 years
LOC (7) Cl. 23 - *04*
U.S. Cl. D23—382



US D452,305 S
AIR VENT
Walter L. Webb, Mukilteo, Wash., assignor to Leen & Associates, Inc., Bellevue, Wash.
Division of application No. 29/101,411, filed on Mar. 3, 1999, which is a continuation of application No. 09/032,413, filed on Feb. 27, 1998, now Pat. No. 5,971,847. This application Aug. 11, 2000, Appl. No. 146,384.
Term of patent 14 years
LOC (7) Cl. 23 - *04*
U.S. Cl. D23—393



US D452,306 S
COMBINED CEILING FAN MOTOR HOUSING AND BLADE IRONS UNIT
Jan Jaspers-Fayer, Idyllwild, Calif., assignor to Minka Lighting, Inc., Corona, Calif.
Continuation of application No. 29/027,366, filed on Aug. 19, 1994, now abandoned, which is a division of application No. 29/017,919, filed on Jan. 25, 1994, now abandoned. This application Mar. 1, 1996, Appl. No. 51,011.
Term of patent 14 years
LOC (7) Cl. 23 - *04*
U.S. Cl. D23—411



US D452,307 S

COMBINED CEILING FAN MOTOR HOUSING AND LIGHT FIXTURE UNIT

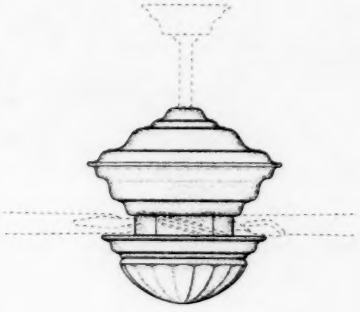
Patrick S. Dolan, 1901 NW. Upshur St., Portland, Oreg. 97209

Filed Dec. 27, 2000, Appl. No. 134,729

Term of patent 14 years

LOC (7) Cl. 23 - *04*

U.S. Cl. D23—411



US D452,308 S

COMBINED CEILING FAN MOUNTING CANOPY, MOTOR AND SWITCH HOUSING, BLADE IRONS AND LIGHT FIXTURE BRACKET UNIT

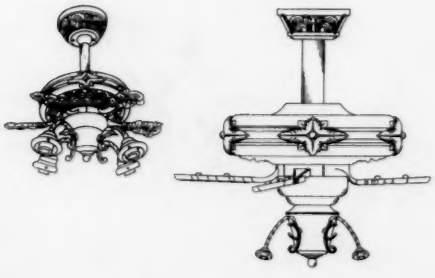
Ching-Tan Lee, No. 52, Lane 480, Section 2, Fenghsi Rd., Fengyuan, Taichung Hsien, Taiwan

Filed Dec. 29, 2000, Appl. No. 134,739

Term of patent 14 years

LOC (7) Cl. 23 - *04*

U.S. Cl. D23—411



US D452,309 S

CEILING FAN MOTOR HOUSING

Patrick S. Dolan, 1901 NW. Upshur St., Portland, Oreg. 97209

Filed Feb. 5, 2001, Appl. No. 136,689

Term of patent 14 years

LOC (7) Cl. 23 - *04*

U.S. Cl. D23—411

US D452,310 S

INHALATION DEVICE

Duncan Robertson; Gary Robert Beaumont, and George Alan Robusti, all of Ware, United Kingdom, assignors to Smith-Kline Beecham Corporation, Research Triangle Park, N.C.

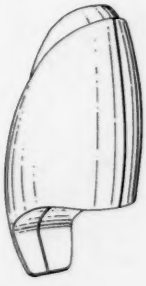
Filed Feb. 26, 2001, Appl. No. 137,641

Claims priority, application United Kingdom, Aug. 26, 2000, 2095346

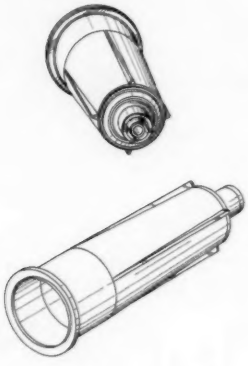
Term of patent 14 years

LOC (7) Cl. 29 - *02*

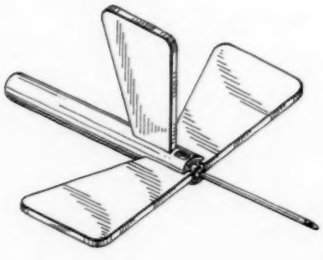
U.S. Cl. D24—110



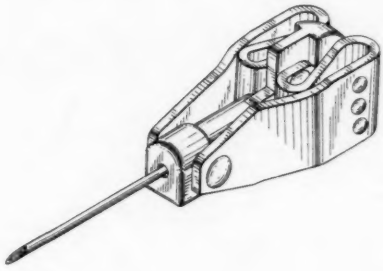
US D452,311 S
DRIP CHAMBER WITH FOUR OUTER AXIAL RIBS FOR INFUSION OR TRANSFUSION MEDICAL LINES
Gianni Guala, Turin, Italy, assignor to Industrie Borla Spa, Italy
Filed Dec. 22, 2000, Appl. No. 134,603
Claims priority, application Italy, Aug. 3, 2000, TO00O0189
Term of patent 14 years
LOC (7) Cl. 24 - *02*
U.S. Cl. D24—112



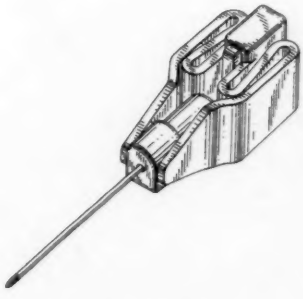
US D452,312 S
NEEDLE ASSEMBLY
Jamieson William Maclean Crawford, New York, N.Y., and Stefanie Livanos, Bethlehem, Pa., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Jan. 5, 2001, Appl. No. 135,126
Term of patent 14 years
LOC (7) Cl. 24 - *02*
U.S. Cl. D24—112



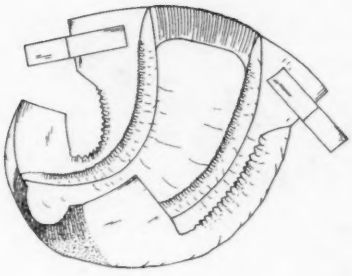
US D452,313 S
NEEDLE ASSEMBLY
Volker Niermann, Little Falls, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Jan. 8, 2001, Appl. No. 135,219
Term of patent 14 years
LOC (7) Cl. 24 - *02*
U.S. Cl. D24—112



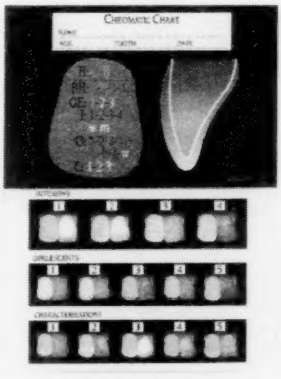
US D452,314 S
NEEDLE ASSEMBLY
Volker Niermann, Little Falls, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Jan. 8, 2001, Appl. No. 135,220
Term of patent 14 years
LOC (7) Cl. 24 - *02*
U.S. Cl. D24—112



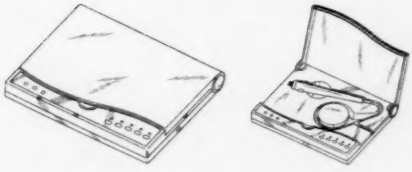
US D452,315 S
DIAPER FOR NEWBORN INFANTS HAVING INTERNAL SLING WITH OPENING FOR UMBILICUS
Fredrica V. Coates, 400 Stanton Ct., Winston-Salem, N.C. 27106
Filed Apr. 20, 2000, Appl. No. 122,116
Term of patent 14 years
LOC (7) Cl. 24 - *04*
U.S. Cl. D24—126



US D452,316 S
CHROMATIC CHART
Lorenzo Vanini, Via Provinciale 86, San Fedele Intelvi, Italy, I-22028
Filed Jan. 17, 2001, Appl. No. 135,680
Claims priority, application Hague Agreement, Jul. 19, 2000, DM/053 372
Term of patent 14 years
LOC (7) Cl. 24 - *02*
U.S. Cl. D24—140



US D452,317 S
HAIR REMOVER
Tsunehiko Ikeda, Kanagawa-ken, Japan, assignor to Better Life Inc., Kanagawa-ken, Japan
Filed Aug. 17, 2000, Appl. No. 128,011
Claims priority, application Japan, Mar. 13, 2000, 12-005407
Term of patent 14 years
LOC (7) Cl. 24 - *02*
U.S. Cl. D24—144



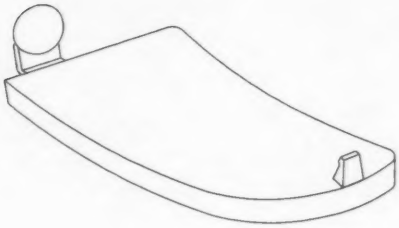
US D452,318 S
ELECTRODE CONNECTOR
Rodney J. Merry, Woodinville; Tom McGrath, Everett; Paul O'Connor, Seattle; Craig K. Black, Snohomish, and Matthew Pedersen, Seattle, all of Wash., assignors to Medtronic Physio-Control Manufacturing Corp., Redmond, Wash.
Filed Feb. 22, 2001, Appl. No. 137,564
Term of patent 14 years
LOC (7) Cl. 24 - *01*
U.S. Cl. D24—168

US D452,319 S

QUADRANT ATTACHMENT PLATE

Ronald E. Huffman, 725 Country Wood Way, Sapulpa, Okla. 74066

Filed Jan. 26, 2001, Appl. No. 136,211
Term of patent 14 years
LOC (7) Cl. 24 - *01*
U.S. Cl. D24—176

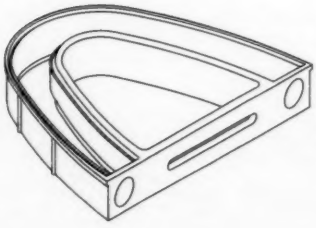


US D452,320 S

ENCASED STONE DENTAL MODEL BASE

Ronald E. Huffman, 725 Country Wood Way, Sapulpa, Okla. 74066

Filed Jan. 26, 2001, Appl. No. 136,244
Term of patent 14 years
LOC (7) Cl. 24 - *01*
U.S. Cl. D24—176

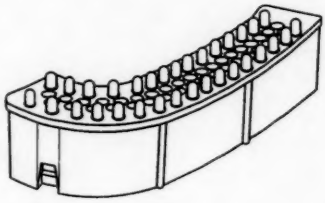


US D452,321 S

QUADRANT DENTAL MODEL BASE HAVING A DOUBLE ROW OF APERTURES

Ronald E. Huffman, 725 Country Wood Way, Sapulpa, Okla. 74066

Filed Jan. 26, 2001, Appl. No. 136,286
Term of patent 14 years
LOC (7) Cl. 24 - *01*
U.S. Cl. D24—176

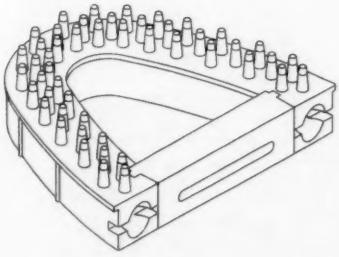


US D452,322 S

PROJECTING PIN DENTAL MODEL BASE WITH DETACHABLE ARTICULATOR ATTACHMENT BAR

Ronald E. Huffman, 725 Country Wood Way, Sapulpa, Okla. 74066

Filed Feb. 27, 2001, Appl. No. 137,699
Term of patent 14 years
LOC (7) Cl. 24 - *01*
U.S. Cl. D24—176



US D452,323 S

GLUCOSE SENSOR

John J. Mastrototaro, Los Angeles; Nannette M. Van Antwerp, and William P. Van Antwerp, both of Valencia, all of Calif., assignors to Medtronic Minimed Inc., Northridge, Calif.

Division of application No. 29/101,218, filed on Feb. 25, 1999, now Pat. No. Des. 433,755. This application Jul. 31, 2000, Appl. No. 127,124.

Term of patent 14 years

LOC (7) Cl. 24 - *01*

U.S. Cl. D24—187

US D452,324 S

BILLIARD BALL IMAGE ON AN ADHESIVE BANDAGE

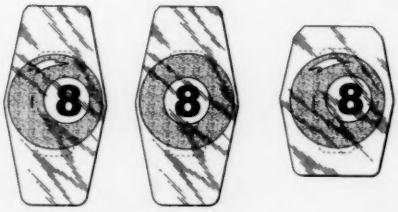
Nancy P. Brogden, New York, N.Y.; Wayne K. Dunshee, Maplewood, Minn.; John Rutig, Huntington, and Barry G. Seelig, New York, both of N.Y., assignors to 3M Innovative Properties Company, St. Paul, Minn.

Filed Oct. 15, 1997, Appl. No. 77,940

Term of patent 14 years

LOC (7) Cl. 24 - *04*

U.S. Cl. D24—189



US D452,325 S

ORTHOPAEDIC CASTING BLANK

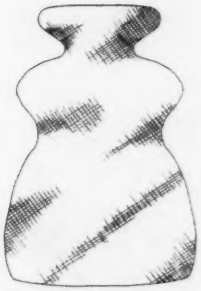
Wendy Henderson, Ventura, Calif., assignor to Royce Medical Company, Camarillo, Calif.

Filed Apr. 5, 2001, Appl. No. 139,807

Term of patent 14 years

LOC (7) Cl. 24 - *04*

U.S. Cl. D24—190



US D452,326 S

DIAPHRAGM FOR INFANT FEEDING BOTTLE

Edward Atkin, London, and Roger Leonard Williams, Hertfordshire, both of United Kingdom, assignors to Cannon Rubber Limited, London, United Kingdom

Filed Sep. 27, 2000, Appl. No. 130,080

Term of patent 14 years

LOC (7) Cl. 07 - *01*

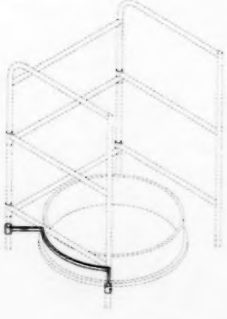
U.S. Cl. D24—197

US D452,327 S
MASSAGE DEVICE FOR FEET
Sherry Chen, P.O. Box 63-99, Taichung, Taiwan, 406
Filed Jan. 18, 2001, Appl. No. 135,945
This patent is subject to a terminal disclaimer.
Term of patent 14 years
LOC (7) Cl. 28 - *03*
U.S. Cl. D24—213

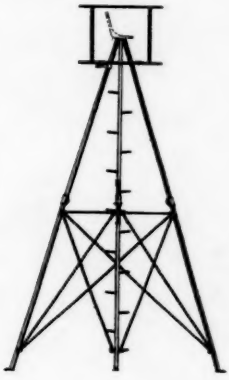
US D452,328 S
SERVICE STATION CANOPY RIM
Michael J. O'Brien, Naperville, Ill., assignor to BP p.l.c., London, United Kingdom
Filed Jul. 21, 2000, Appl. No. 126,696
Term of patent 14 years
LOC (7) Cl. 25 - *02*
U.S. Cl. D25—56

US D452,329 S
ENVIRONMENTAL ENCLOSURE FOR VENDING MACHINES
John J. Marshall, North York; John Eric Marshall, Whitby, and John Woloshyn, Scarborough, all of Canada, assignors to Compass Group USA, Inc., Charlotte, N.C.
Filed Nov. 30, 2000, Appl. No. 133,490
Term of patent 14 years
LOC (7) Cl. 25 - *03*
U.S. Cl. D25—58

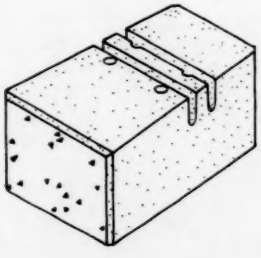
US D452,330 S
MANHOLE SHIELD RETAINER
Thomas Joseph Johnston, Garden Grove, Calif., assignor to No Fade Coatings, Inc., Garden Grove, Calif.
Filed Feb. 9, 2001, Appl. No. 136,980
Term of patent 14 years
LOC (7) Cl. 25 - *02*
U.S. Cl. D25—61



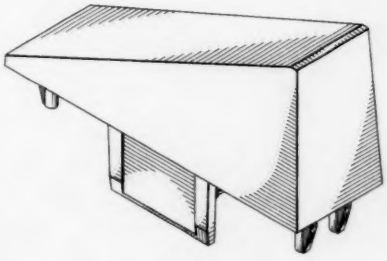
US D452,331 S
TRIPOD HUNTING STAND
Edward William Bohlman, 8007 Highway 90, Milton, Fla. 32583
Filed Nov. 20, 2000, Appl. No. 132,924
Term of patent 14 years
LOC (7) Cl. 25 - *04*
U.S. Cl. D25—62



US D452,332 S
MODULAR RETAINING WALL BLOCK
Peter J. Blomquist, Melbourne Beach, Fla., and Todd P. Strand, Marine on St. Croix, Minn., assignors to Kiltie Corporation, Oakdale, Minn.
Division of application No. 29/112,434, filed on Oct. 15, 1999, now Pat. No. Des. 435,302, and a division of application No. 29/130,433, filed on Oct. 2, 2000, now Pat. No. Des. 447,573. This application May 4, 2001, Appl. No. 141,432.
Term of patent 14 years
LOC (7) Cl. 25 - *01*
U.S. Cl. D25—113

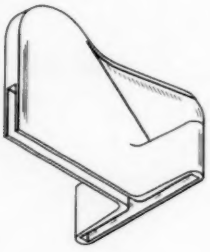


US D452,333 S
SAREPTA FENCE POST FINIAL
Richard James Merrick, Alda, Nebr., assignor to T.M.C., Inc., Alda, Nebr.
Filed Mar. 21, 2000, Appl. No. 116,405
Term of patent 14 years
LOC (7) Cl. 25 - *01*
U.S. Cl. D25—135

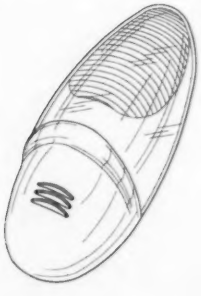


US D452,334 S
STAGGERED LOOK SHAKE SIDING PANEL
Thomas Charles Gilbert, Clarklake, Mich.; Kenneth David Bosler, Holland, and Steven Craig Booz, Devon, both of Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.
Continuation of application No. 09/735,681, filed on Dec. 13, 2000, which is a continuation-in-part of application No. 09/190,038, filed on Nov. 12, 1998. This application Feb. 20, 2001, Appl. No. 137,397.
Term of patent 14 years
LOC (7) Cl. 25 - *01*
U.S. Cl. D25—143

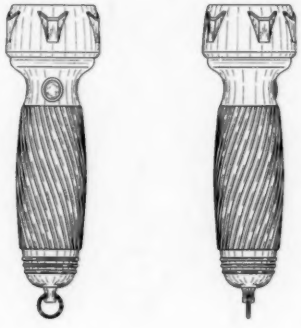
US D452,335 S
STEEL GUARD RAIL POST SAFETY DELINEATOR-PEDESTRIAN
James C. Brown, 2121 Skyhawk Dr., Fort Wayne, Ind. 46815
Filed Jun. 1, 2001, Appl. No. 142,778
Term of patent 14 years
LOC (7) Cl. 25 - *99*
U.S. Cl. D25—199



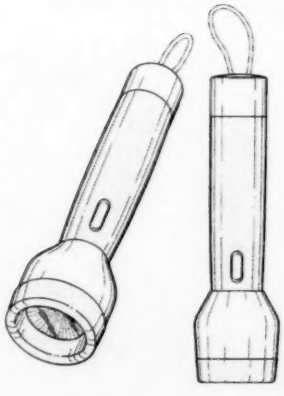
US D452,336 S
NIGHT LIGHT
Scott P. Liu, Loveland, and Gregory Deswarte, Cincinnati, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Feb. 22, 2001, Appl. No. 137,597
Term of patent 14 years
LOC (7) Cl. 26 - *05*
U.S. Cl. D26—26



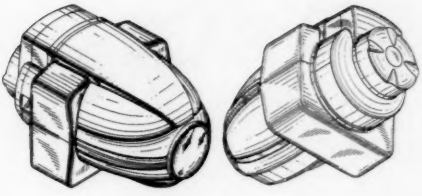
US D452,337 S
FLASHLIGHT
Stephanie Wai Man Shiu, Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China, assignor to Gold Coral International Limited, Kowloon, The Hong Kong Special Administrative Region of the People's Republic of China
Filed Dec. 28, 2000, Appl. No. 134,681
Term of patent 14 years
LOC (7) Cl. 26 - *02*
U.S. Cl. D26—46



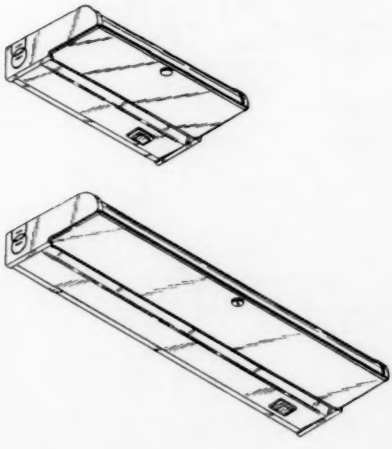
US D452,338 S
FLASHLIGHT
William T. Dalebout, Logan, and Jaremy T. Butler, Paradise, both of Utah, assignors to Icon Health & Fitness, Inc., Logan, Utah
Filed Apr. 13, 2001, Appl. No. 139,744
Term of patent 14 years
LOC (7) Cl. 26 - *02*
U.S. Cl. D26—49



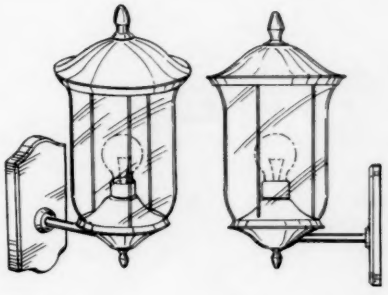
US D452,339 S
LAMP HEAD ASSEMBLY
Breck M. Outland, Dallas; Timothy S. Martinson, Arlington; James Maddux, III, Carrollton; J. Christopher Corry, Dallas; Michael C. Bell, Emory; Timothy W. Terleski, and Staci A. Mininger, both of Garland, all of Tex., assignors to Vari-Lite, Inc., Dallas, Tex.
Filed May 5, 1998, Appl. No. 87,552
Term of patent 14 years
LOC (7) Cl. 26 - *06*
U.S. Cl. D26—63



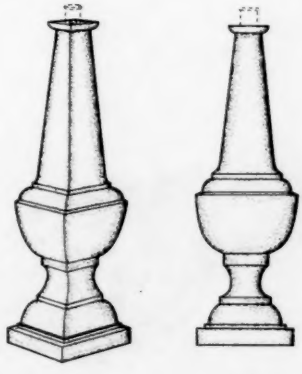
US D452,340 S
COUNTER LIGHT FIXTURE
Mark A. Pickett, Pasadena; Maer Skegin, West Hollywood, and Scott Searle, Encino, all of Calif., assignors to CSL Lighting Manufacturing Inc., City of Industry, Calif.
Filed Jun. 25, 1999, Appl. No. 107,092
Term of patent 14 years
LOC (7) Cl. 26 - *05*
U.S. Cl. D26—76



US D452,341 S
COACHLIGHT
Dominic H. Jones, Columbus, Ohio; Victoria L. Brackney, Atlanta, Ga.; Donald J. Staufenberg, Dublin, and Ludwin M. Mora, Worthington, both of Ohio, assignors to National Manufacturing Co., Sterling, Ill.
Filed Aug. 9, 2000, Appl. No. 127,580
Term of patent 14 years
LOC (7) Cl. 26 - *05*
U.S. Cl. D26—87



US D452,342 S
TABLE LAMP
Patrick S. Dolan, 1901 NW. Upshur, Portland, Oreg. 97209
Filed Dec. 29, 2000, Appl. No. 134,931
Term of patent 14 years
LOC (7) Cl. 26 - *03*
U.S. Cl. D26—110

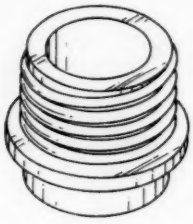


US D452,343 S

END CAP OF A PIPE-TYPE LAMP

Wun Fang Pan, No. 123, Lane 99, Pu Din Road, Hsinchu City, Taiwan

Filed May 1, 2001, Appl. No. 141,063
Term of patent 14 years
LOC (7) Cl. 26 - *99*
U.S. Cl. D26—138



US D452,344 S

LIGHTING FIXTURE BACK PLATE

Aaron Mitchell Johnson, Fort Worth, Tex., assignor to Quorum International, L.P., Fort Worth, Tex.

Filed Jan. 5, 2001, Appl. No. 135,090
Term of patent 14 years
LOC (7) Cl. 26 - *99*
U.S. Cl. D26—142

US D452,345 S

ARM FOR LIGHTING FIXTURE

Jose Luis Mas Tortosa, L'Eliana-Valencia, Spain, assignor to Quorum International, L.P., Fort Worth, Tex.

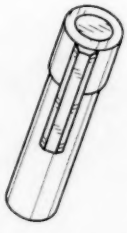
Filed Jan. 5, 2001, Appl. No. 135,149
Term of patent 14 years
LOC (7) Cl. 26 - *99*
U.S. Cl. D26—155

US D452,346 S

COMBINED ARTICLE HOLDER AND CIGARETTE SNUFFER

John W. Storlie, Box 195, St. Cloud, Minn. 56302

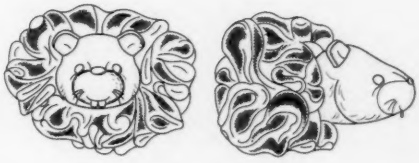
Division of application No. 29/128,250, filed on Aug. 22, 2000.
This application Jul. 6, 2001, Appl. No. 144,071.
Term of patent 14 years
LOC (7) Cl. 27 - *03*
U.S. Cl. D27—136



US D452,347 S
HAIR PARTING DEVICE
Barbara Stachowski, 11 El Gavilan, Orinda, Calif. 94563
Filed Feb. 20, 2001, Appl. No. 137,465
Term of patent 14 years
LOC (7) Cl. 28 - *03*
U.S. Cl. D28—10

US D452,348 S
DISPOSABLE RAZOR
Jeffrey W. Wonderley, Fort Defiance, Va., assignor to American Safety Razor Company, Verona, Va.
Filed Aug. 7, 2000, Appl. No. 127,345
Term of patent 14 years
LOC (7) Cl. 28 - *03*
U.S. Cl. D28—48

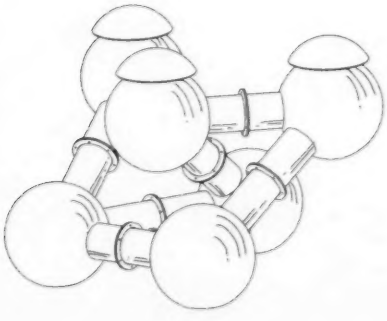
US D452,349 S
COMBINED SOAP HOLDER AND SCRUB POUF FOR BATHING CHILDREN
Connie M Badillo, 2518 N. Shady Forest La., Orange, Calif. 92867
Filed Sep. 25, 2000, Appl. No. 129,944
Term of patent 14 years
LOC (7) Cl. 28 - *03*
U.S. Cl. D28—63



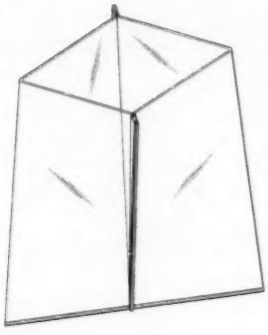
US D452,350 S
EYE SHALLOW CASE
Mei-Yun Huang, 58, Ma Yuan West St., Taichung, Taiwan
Filed Aug. 9, 2000, Appl. No. 127,795
Term of patent 14 years
LOC (7) Cl. 28 - *03*
U.S. Cl. D28—76

US D452,351 S
HOCKEY PAD
Pierre Paiement, St-Jérôme, Canada, assignor to Igloo Vikski Inc., Ste-Agathe-des-Monts, Canada
Filed Apr. 13, 2001, Appl. No. 140,135
Term of patent 14 years
LOC (7) Cl. 29 - *02*
U.S. Cl. D29—120.1

US D452,352 S
AQUARIUM
Grant Linscott, 3 Apperley Road, Stocksfield, Northumberland, United Kingdom, NE43 7PD
Filed Sep. 26, 2000, Appl. No. 129,974
Term of patent 14 years
LOC (7) Cl. 30 - *02*
U.S. Cl. D30—105

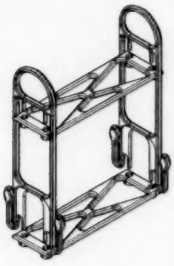


US D452,353 S
TETRAHEDRAL PLASTIC FILM BAG FOR USE IN FABRIC CARE PROCESSES
Rodney Mahlon Wise, deceased, late of Cincinnati, by Linda Wise, legal representative; Thomas Charles Hortel, Cininnati, and George Carl Kinstedt, West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of application No. 29/120,511, filed as application No. PCT/US99/29772, filed on Dec. 15, 1999. This application Dec. 15, 2000, Appl. No. 134,235.
Term of patent 14 years
LOC (7) Cl. 08 - *99*
U.S. Cl. D32—36



US D452,354 S
COMBINED ELECTRIC IRON AND BASE
Tony Hsu, Yung Kang, Taiwan, assignor to Lundar Electric Industrial Co., Ltd., Yung Kang, Taiwan
Filed Dec. 28, 2000, Appl. No. 134,670
Term of patent 14 years
LOC (7) Cl. 07 - *05*
U.S. Cl. D32—70

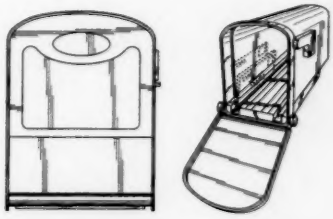
US D452,355 S
BAG HOLDER
Frank A. Leyshon, Cambridge, Ohio, assignor to Leyshon Miller Industries, Inc., Cambridge, Ohio
Filed Nov. 1, 2000, Appl. No. 132,098
Term of patent 14 years
LOC (7) Cl. 09 - *09*
U.S. Cl. D34—6



US D452,356 S
CONTAINER
Larry Gene Zimmerman, Hollis, N.H., assignor to Sterilite Corporation, Townsend, Mass.
Filed Jan. 12, 2001, Appl. No. 135,552
Term of patent 14 years
LOC (7) Cl. 09 - *09*
U.S. Cl. D34—7

US D452,357 S
COLLAPSIBLE CART WITH A CONTAINER
David M. Stravitz, 16 Park Ave. - Suite 14A, New York, N.Y. 10016; David Harris, S3335A Gillem Rd., Baraboo, Wis. 53913, and Clint Kolda, 113 Vista Dr., Cottage Grove, Wis. 53527
Division of application No. 29/125,304, filed on Jun. 21, 2000, now Pat. No. Des. 445,229. This application May 10, 2001, Appl. No. 141,816.
Term of patent 14 years
LOC (7) Cl. 12 - *02*
U.S. Cl. D34—19

US D452,358 S
NESTABLE MAILBOX
Robert W. Lackey, Hickory; Robert C. Beckman, Vale, both of N.C., and Gregory A. Harris, Tacoma, Wash., assignors to Home Impressions, Hickory, N.C.
Continuation of application No. PCT/US98/17505, filed on Aug. 24, 1998. This application Jun. 16, 2000, Appl. No. 125,082.
Term of patent 14 years
LOC (7) Cl. 99 - *00*
U.S. Cl. D99—29



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18th DAY OF DECEMBER, 2001

NOTE— Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

ABB Instrumentation Limited: *See*—
Roscher, Dietrich; Gebert, Norbert; and Reinold, Udo, 6,331,037, Cl. 346-141.000.

ABB Vetco Gray, Inc.: *See*—
Hosie, Stanley; Chalmers, George; and Buchan, Robert, 6,330,918, Cl. 166-341.000.

Abe, Tomokazu; Matsumoto, Satoshi; and Shimazaki, Toshifumi, to Idemitsu Petrochemical Co., Ltd. Method for producing laminated moldings. 6,331,263, Cl. 264-40.500.

Abe, Tsutomu: *See*—
Tajima, Hiroki; Koizumi, Yutaka; Aono, Kiyomi; Abe, Tsutomu; Karita, Seiichiro; Okazaki, Takeshi; Omata, Kouichi; and Kubota, Masahiko, 6,331,051, Cl. 347-65.000.

Abraham, William D.: *See*—
Curtis, Thomas T.; Lamb, Gordon D.; and Abraham, William D., 6,331,510, Cl. 508-578.000.

Abrams, Robert M., to Scimed Life Systems, Inc. Detachable covering for an implantable medical device. 6,331,184, Cl. 606-200.000.

Abroy, Hamid S.; Greer, David E.; and Leppla, John K., to Square D Company. Modular switch mechanism. 6,331,684, Cl. 200-17.00R.

Accenture, LLP: *See*—
Bowman-Amuah, Michel K., 6,332,163, Cl. 709-231.000.

Accentus PLC: *See*—
Morgan, George Richard, 6,331,290, Cl. 424-46.000.

Acker, David E.; Govari, Assaf; Fenster, Maier; and Shapiro, Avishai, to Biosense, Inc. Medical procedures and apparatus using intrabody probes. 6,332,089, Cl. 600-424.000.

Ackley, Donald E.; and Graham, Scott O., to Nanogen, Inc. Advanced active circuits and devices for molecular biological analysis and diagnostics. 6,331,274, Cl. 422-68.100.

Ackley, H. Sprague, to Intermec IP Corp. High resolution laser imager for low contrast symbology. 6,330,974, Cl. 235-472.010.

Ackley, H. Sprague: *See*—
Wiklof, Christopher A.; and Ackley, H. Sprague, 6,330,972, Cl. 235-462.250.

Adachi, Michio: *See*—
Inoue, Masaomi; Sato, Osamu; and Adachi, Michio, 6,330,870, Cl. 123-90.170.

Adam, Philippe H.: *See*—
Faust, Michael B.; Rahman, Faress H.; and Adam, Philippe H., 6,331,195, Cl. 55-396.000.

Adams, Laura Ellen; Bethea, Clyde George; Eskildsen, Lars Erik; Nykolak, Gerald; People, Rossevelt; and Tanbun-Ek, Tawee, to Lucent Technologies Inc. Optical system for reduced SBS. 6,331,908, Cl. 359-188.000.

ADC Telecommunications, Inc.: *See*—
Coden, Michael H., 6,331,985, Cl. 370-403.000.

Adler, David A.; and Sheppard, Paul O., to ZymoGenetics, Inc. Secreted salivary ZSIG63 Polypeptide. 6,331,413, Cl. 435-69.100.

Adler-Nissen, Jens; Jensen, Jens-Peter; and Dyhr, Einar, to Adler-Nissen, Jens. Method and apparatus for stir-frying. 6,331,323, Cl. 426-523.000.

Administrator, National Aeronautics and Space Administration: *See*—
Amer, Tahani R.; Subramanian, Chelakara; Upchurch, Billy T.; Alderfer, David W.; Sealey, Bradley S.; and Burkett, Cecil G., Jr., 6,331,075, Cl. 374-44.000.

Adobe Systems Incorporated: *See*—
Paine, Mark A.; and Young, Jeff, 6,332,148, Cl. 707-512.000.

Adomeit, Werner: *See*—
Correa, Juan C. C.; Hernandez, Nestor; Bushnell, Peter R.; and Adomeit, Werner, 6,330,807, Cl. 62-262.000.

Adris, Alaa: *See*—
Roy, Surajit; Pruden, Barry; Adris, Alaa; and Grace, John, 6,331,283, Cl. 423-652.000.

Adsit, Daniel Mark; and Yaroch, Michael D., to Ford Global Technologies, Inc. Roof storage compartment assembly for vehicles. 6,331,026, Cl. 296-37.700.

Advance USA, Inc.: *See*—
O'Neill, Michael A.; Kirk, Wayne D.; Simmons, Stuart C.; Trudeau, Paul; and Bremmer, Jonathan W., 6,331,028, Cl. 296-100.000.

Advanced Cardiovascular Systems, Inc.: *See*—
Becker, Neil M.; Clarke, Duncan; Peterson, Chuck; Quinones, Albert A.; Haldeman, Paul; Armstrong, Kenneth K.; Wilson, Victor; Wilson, Bruce; Thompson, Gary; and Colvan, William P., 6,331,176, Cl. 604-533.000.

Advanced Micro Devices: *See*—
Wang, Janet S. Y.; Derhacobian, Narbeh; and Sobek, Daniel, 6,331,953, Cl. 365-185.290.

Advanced Micro Devices, Inc: *See*—
Raeder, Christopher H.; and Shipley, Kevin, 6,331,137, Cl. 451-285.000.

Advanced Micro Devices, Inc.: *See*—
Anjum, Mohammed; Stuber, Alan L.; and Burki, Ibrahim K., 6,331,458, Cl. 438-197.000.
Bautista, Edward V., Jr.; Hamilton, Darlene G.; Lee, Weng Fook; Chen, Pau-Ling; and Wong, Keith H., 6,331,951, Cl. 365-185.220.
Blish, Richard C., II; Hatchard, Colin; and Morgan, Ian, 6,331,735, Cl. 257-777.000.
Gupta, Subhash; and Chen, Susan Hsuching, 6,331,732, Cl. 257-752.000.
Kuo, Tiao-Hua; Kasa, Yasushi; and Chen, Johnny C., 6,331,950, Cl. 365-185.180.
Typaldos, Melanie D., 6,332,173, Cl. 710-106.000.
Wang, Janet S. Y.; Derhacobian, Narbeh; and Sunkavalli, Ravi S., 6,331,952, Cl. 365-185.290.
Wang, John J.; Li, Jiang; and Wu, Yider, 6,331,954, Cl. 365-185.290.
Witt, David B., 6,332,187, Cl. 712-23.000.
Witt, David B., 6,332,191, Cl. 712-240.000.

Advanced Power Devices, Inc.: *See*—
Rodov, Vladimir; Hsueh, Wayne Y. W.; Chang, Paul; and Chern, Michael, 6,331,455, Cl. 438-138.000.

Advanced Technology Material, Inc.: *See*—
Xu, Chongying; Baum, Thomas H.; Carl, Ralph J.; and Sturm, Edward A., 6,331,211, Cl. 118-719.000.

Advantest Corp.: *See*—
Sugamori, Shigeru, 6,331,770, Cl. 324-158.100.

Aerovane Products, Inc.: *See*—
Culver, Philip H., deceased, 6,330,886, Cl. 135-15.100.

Afriat, Isabelle; and Boulier, Virginie, to L'Oreal. Composition in the form of a water-in-oil emulsion having a changing shear rate. 6,331,306, Cl. 424-401.000.

Agbaria, Adnan M.: *See*—
Meth, Kalman Zvi; and Agbaria, Adnan M., 6,332,199, Cl. 714-13.000.
Meth, Kalman Zvi; and Agbaria, Adnan M., 6,332,200, Cl. 714-16.000.

Agere Systems Guardian Corp.: *See*—
Kizilyalli, Isik C.; Merchant, Sailesh M.; and Radosevich, Joseph R., 6,331,460, Cl. 438-243.000.
Marenco, Alvaro Luis; and Mitchell, Jaime Tadeo, 6,331,988, Cl. 370-510.000.

Agilent Technologies, Inc: *See*—
Davis, Bradley K.; Thelen, Robert M.; and Allyn, Michael C., 6,331,921, Cl. 360-67.000.

Agilent Technologies, Inc.: *See*—
Wang, Tak Kui; Barth, Phillip W.; and Goedert, Michel G., 6,331,678, Cl. 174-253.000.

Agouron Pharmaceuticals, Inc.: *See*—
Dragovich, Peter S.; Prins, Thomas J.; and Zhou, Ru, 6,331,554, Cl. 514-357.000.

AGR International, Inc.: *See*—
Dodd, James W., 6,331,210, Cl. 118-303.000.

Ahern, Brian S.: *See*—
Weyburne, David W.; and Ahern, Brian S., 6,331,260, Cl. 216-72.000.

Ahmad, Syed Sajid, to Micron Technology, Inc. Leadframes including offsets extending from a major plane thereof, packaged semiconductor devices including same, and methods of designing and fabricating such leadframes. 6,331,448, Cl. 438-112.000.

Ai, Jun; Popelek, Jan; Li, Yao; and Chen, Ray T., to NEC Research Institute, Inc. Beam splitting ball lens, method for its manufacture, and apparatus for its packaging. 6,332,051, Cl. 385-33.000.

Aida, Yukikatsu: *See*—
Munakata, Takeo; Kikuchi, Naoshi; Shinohara, Takashi; Banse, Hideo; Kaneko, Takao; Akasaka, Hiroji; Aida, Yukikatsu; Shimokura, Naoyoshi; Ishikubo, Yuji; Okada, Tetsuya; and Suzuki, Tamezo, 6,331,677, Cl. 174-128.100.

Aimura, Hiroshi: *See*—
Ozawa, Toshiaki; Moriyama, Shoichi; and Aimura, Hiroshi, 6,330,742, Cl. 29-603.060.

Aiolova, Maria: *See*—
Lee, Dosuk D.; Rey, Christian; Aiolova, Maria; and Tofighi, Aliassghar, 6,331,312, Cl. 424-426.000.

Air Products and Chemicals, Inc.: *See*—
Walker, Frederick Herbert, 6,331,583, Cl. 523-404.000.

Airborne Industrial Minerals Inc.: *See*—
Phinney, Robin, 6,331,193, Cl. 23-313.00P.

Aisin Seiki Kabushiki Kaisha: *See*—
Seko, Hideo; Okamoto, Hikaru; and Ishii, Masami, 6,331,224, Cl. 156-181.000.

Aizawa, Junichi, to Matsushita Electric Industrial Co., Ltd. Data transmitting apparatus and data transmitting method. 6,332,208, Cl. 714-786.000.

Ajinomoto Co., Inc.: *See*—
Kato, Nobuo, 6,331,428, Cl. 435-233.000.
Moriya, Mika; Izui, Hiroshi; Ono, Eiji; Matsui, Kazuhiko; Ito, Hisao; and Hara, Yoshihiko, 6,331,419, Cl. 435-110.000.
Ono, Nobukazu, 6,331,528, Cl. 514-44.000.

Akamine, Masami: *See*—
Kagoshima, Takehiko; and Akamine, Masami, 6,332,121, Cl. 704-262.000.

Akamine, Shoko; Miyazawa, Yasunao; and Maruoka, Shigenobu, to Lintec Corporation. Stirring device. 6,331,071, Cl. 366-325.920.

Akasaka, Hiroji: *See*—
Munakata, Takeo; Kikuchi, Naoshi; Shinohara, Takashi; Banse, Hideo; Kaneko, Takao; Akasaka, Hiroji; Aida, Yukikatsu; Shimokura, Naoyoshi; Ishikubo, Yuji; Okada, Tetsuya; and Suzuki, Tamezo, 6,331,677, Cl. 174-128.100.

Akase, Atsuya: *See*—
Muramatsu, Hiroyuki; Kuwahara, Seiji; Akase, Atsuya; Kawaguchi, Kouji; and Sato, Tatsuru, 6,331,047, Cl. 347-55.000.
Akiniwa, Taishi: *See*—
Kamada, Kazuo; Koyama, Shoichi; Asahi, Nobuyuki; Suzuki, Toshiyuki; Shiohama, Eiji; Sugimoto, Masaru; Yamamoto, Shohei; Hashizume, Jiro; Akiniwa, Taishi; and Tanaka, Takashi, 6,331,063, Cl. 362-237.000.
Akita, Noboru: *See*—
Teru, Suehachi; Miyano, Yasusada; Akita, Noboru; Otsuka, Kenji; and Shimada, Takashi, 6,331,281, Cl. 423-237.000.
Aksela, Reijo: *See*—
Jäkärä , Jukka; Aksela, Reijo; Parén, Aarto; and Renvall, Ilkka, 6,331,192, Cl. 8-109.000.
Akui, Jun: *See*—
Kojima, Daisuke; Imai, Genji; Akui, Jun; Kogure, Hideo; and Isozaki, Osamu, 6,331,376, Cl. 430-284.100.
Alaris Medical Systems, Inc.: *See*—
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Alauddin, Mian M.: *See*—
Conti, Peter S.; Alauddin, Mian M.; and Fissekis, John D., 6,331,287, Cl. 424-1.890.
Alayan, Hussein Abbas: *See*—
Nilsson, Ulf Tomas Weine; Alayan, Hussein Abbas; and Armantrout, Jeffrey A., 6,332,073, Cl. 455-404.000.
Albano, Andre; Michel, Patrick; Benayoun, Alain; and Le Pennec, Jean-Francois, to International Business Machines Corporation. Adapter device for the transmission of digital data over an AC power line. 6,331,814, Cl. 340-310.010.
Albany International Corp.: *See*—
Joyce, Michael J., 6,331,341, Cl. 428-138.000.
Albizzati, Enrico: *See*—
Galimberti, Maurizio; and Albizzati, Enrico, 6,331,600, Cl. 526-160.000.
Albrecht, Laurence J.; and Saliba, George A., to Quantum Corporation. Backward compatible head and head positioning assembly for a linear digital tape drive. 6,331,920, Cl. 360-63.000.
Albus, Udo: *See*—
Weichert, Andreas; Albus, Udo; and Jansen, Hans-Willi, 6,331,546, Cl. 514-260.000.
Alcatel: *See*—
Prieto, Didier; Rogeaux, Eric; Villemazet, Jean-Francois; and Parra, Thierry, 6,331,807, Cl. 333-128.000.
Alcon Laboratories, Inc.: *See*—
Cohen, Donald M., 6,331,171, Cl. 604-27.000.
Alcon Universal Ltd.: *See*—
Conrow, Raymond E.; and Klimko, Peter G., 6,331,566, Cl. 514-549.000.
Kabra, Bhagwati P., 6,331,540, Cl. 514-230.200.
Klimko, Peter G.; Hellberg, Mark R.; and Graff, Gustav, 6,331,644, Cl. 554-219.000.
Alderfer, David W.: *See*—
Amer, Tahani R.; Subramanian, Chelakara; Upchurch, Billy T.; Alderfer, David W.; Sealey, Bradley S.; and Burkett, Cecil G., Jr., 6,331,075, Cl. 374-44.000.
Alitalo, Kari: *See*—
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Alkermes Controlled Therapeutics II Inc.: *See*—
Lyons, Shawn L.; and Wright, Steven G., 6,331,317, Cl. 424-489.000.
Allan, Sandra Anne; Sonenshine, Daniel E.; and Burridge, Michael John, to University of Florida; and Old Dominion University Research Foundation. Tick pheromones and uses thereof. 6,331,297, Cl. 424-84.000.
Allen, John Timothy; and Box, Steven Anthony, to Weatherford/Lamb, Inc. Tong. 6,330,911, Cl. 166-77.510.
Allen, Neil Robert, to KA PTY Ltd. Apparatus and method for separating particles. 6,330,946, Cl. 209-219.000.
Allgeier, Alan Martin: *See*—
Koch, Theodore Augur; Allgeier, Alan Martin; Harper, Mark Jay; and Sengupta, Sourav Kumar, 6,331,624, Cl. 540-538.000.
AlliedSignal, Inc.: *See*—
Arora, Gulshan K.; Groninger, Donn A.; Leech, Francis; and Hobbs, Bobby J., 6,330,790, Cl. 60-39.080.
Eccles, Steven Robert; and Schindler, Wayne Godoy, 6,331,099, Cl. 416-142.000.
Faust, Michael B.; Rahman, Faress H.; and Adam, Philippe H., 6,331,195, Cl. 55-396.000.
Allyn, Michael C.: *See*—
Davis, Bradley K.; Thelen, Robert M.; and Allyn, Michael C., 6,331,921, Cl. 360-67.000.
Alperovitch, Vladimir, to Negev Tornado Ltd. Low turbulence co-current cyclone separator. 6,331,196, Cl. 55-459.100.
Alps Electric Co., Ltd.: *See*—
Ozawa, Toshiaki; Moriyama, Shoichi; and Aimura, Hiroshi, 6,330,742, Cl. 29-603.060.
Sakai, Osamu; and Takagi, Keiji, 6,331,348, Cl. 428-209.000.
Yamada, Yukimitsu; Kawahata, Ken; Hebiguchi, Hiroyuki; Fujiyoshi, Tatsumi; and Saito, Junichi, 6,331,862, Cl. 345-660.000.
Alstom (Switzerland) Ltd.: *See*—
Paikert, Bettina; Steinbach, Christian; Straessle, Richard; and Winkler, Dieter, 6,331,109, Cl. 431-350.000.
AltaVista Company: *See*—
deVries, Arjen P.; Sokolov, Michael; Kovalcin, David E.; and Eberman, Brian, 6,332,144, Cl. 707-102.000.
Aluminium Pechiney: *See*—
Moriceau, Jacques, 6,331,269, Cl. 266-207.000.
ALZA Corporation: *See*—
Brodbeck, Kevin J.; and Shen, Theodore T., 6,331,311, Cl. 424-425.000.
Alzeta Corporation: *See*—
Kendall, Robert M.; and Greenberg, Steven J., 6,330,791, Cl. 60-39.110.
Amano, Kazuhiko; Uebaba, Kazuo; and Ishiyama, Hitoshi, to Seiko Epson Corporation. Device for measuring physiological state. 6,331,159, Cl. 600-300.000.
Amano, Kenji: *See*—
Satoyoshi, Tsutomu; Amano, Kenji; Ito, Hiromichi; and Miyazaki, Yoshito, 6,331,754, Cl. 315-111.510.
Amanuma, Tatsuo: *See*—
Miyamoto, Hidenori; Imura, Yoshio; Kato, Minoru; Ohishi, Sueyuki; Terui, Nobuhiko; and Amanuma, Tatsuo, 6,332,060, Cl. 396-55.000.
Amemiya, Kimio: *See*—
Nozu, Mitsunori; Amemiya, Kimio; and Tokunaga, Tsutomu, 6,331,842, Cl. 345-60.000.
Amemiya, Mitsuaki; and Tsukamoto, Masami, to Canon Kabushiki Kaisha. Alignment mark detection method, and alignment method, exposure method and device, and device production method making use of the alignment mark detection method. 6,331,709, Cl. 250-491.100.
Amer, Tahani R.; Subramanian, Chelakara; Upchurch, Billy T.; Alderfer, David W.; Sealey, Bradley S.; and Burkett, Cecil G., Jr., to Administrator, National Aeronautics and Space Administration. Device and method for measuring thermal conductivity of thin films. 6,331,075, Cl. 374-44.000.
American Air Liquide, Inc.: *See*—
Philippe, Louis C., 6,331,107, Cl. 431-285.000.
American Cooling Systems, LLC: *See*—
Link, Larry Ray, 6,331,743, Cl. 310-103.000.
American Home Products Corporation: *See*—
Zhu, Tianmin; Shah, Syed M.; and Saunders, Richard W., 6,331,547, Cl. 514-291.000.
American Superconductor Corporation: *See*—
Li, Qi; Podtburg, Eric R.; Walsh, Patrick John; Carter, William L.; Riley, Gilbert N., Jr.; Rupich, Martin W.; Thompson, Elliott; and Otto, Alexander, 6,331,675, Cl. 174-125.100.
Ameritech Corporation: *See*—
Latter, Teresa Farias; Moss, John Wesley; McBlain, Thomas Joseph; Maciejewski, James Thomas; and Hardzinski, Mary Louise, 6,332,021, Cl. 379-142.010.
Amkor Technology, Inc.: *See*—
Fusaro, James M.; Darveaux, Robert F.; and Rodriguez, Pablo, 6,331,451, Cl. 438-126.000.
Amrein, Alois, to cawitec AG. Method and apparatus for stripping and removing the shielding from a cable. 6,330,839, Cl. 81-9.510.
Amsbury, Burl: *See*—
Steenson, James Henry, Jr.; and Amsbury, Burl, 6,332,103, Cl. 701-1.000.
Amway Corporation: *See*—
Foote, Michael R.; and Brumbaugh, Ernie, 6,331,512, Cl. 510-226.000.
Anadys Pharmaceutical, Inc.: *See*—
Laing, Lance G.; Arenas, Jaime E.; Cload, Sharon T.; Lillie, James W.; and Pakula, Andrew A., 6,331,392, Cl. 435-6.000.
Analog Devices, Inc.: *See*—
Garde, Douglas; Zatsman, Alexei; Lezerovitz, Aryeh; Greenfield, Zvi; Levine, David R.; and Fridman, Jose, 6,332,188, Cl. 712-204.000.
Ancra International, LLC.: *See*—
Burrows, Ward C., 6,331,094, Cl. 410-30.000.
Anderson, Dennis K.: *See*—
Ng, John S.; Wang, Ping T.; Baez, Julio A.; Liu, Chin; Anderson, Dennis K.; Lawson, Jon P.; Erb, Bernhard; Wieczorek, Joseph; Mucciariello, Gennaro; Vanzanella, Fortunato; Kunda, Sastry A.; Letendre, Leo J.; Pozzo, Mark J.; Sing, Yuen-Lung L.; and Yonan, Edward E., 6,331,622, Cl. 540-41.000.
Anderson, Harold S.: *See*—
Van Hook, Timothy J.; Cheng, Howard H.; DeLaurier, Anthony P.; Gossett, Carroll P.; Moore, Robert J.; Shepard, Stephen J.; Anderson, Harold S.; Princen, John; Doughty, Jeffrey C.; Pooley, Nathan F.; Sheppard, Byron; Takeda, Genyo; and Kato, Shuhei, 6,331,856, Cl. 345-503.000.
Andlauer, Phillip: *See*—
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Ando, Nobuyuki: *See*—
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Ando, Soyoko: *See*—
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Andrea Electronics Corporation: *See*—
Marash, Joseph, 6,332,028, Cl. 381-92.000.
Andree, Roland: *See*—
Linker, Karl-Heinz; Findeisen, Kurt; Andree, Roland; Drewes, Mark-Wilhelm; Lender, Andreas; Schallner, Otto; Haas, Wilhelm; Santel, Hans-Joachim; and Dollinger, Markus, 6,331,507, Cl. 504-244.000.
Andrews, Warner B., Jr.: *See*—
White, Stanley A.; Walley, Kenneth S.; Johnston, James W.; Henderson, P. Michael; Hale, Kelly H.; Andrews, Warner B., Jr.; and Siann, Jonathan I., 6,331,782, Cl. 324-763.000.

Andricacos, Panayotis C.; Horkans, W. Jean; Kwietniak, Keith T.; Locke, Peter S.; and Uzoh, Cyprian E., to International Business Machines Corporation. Method of improving contact reliability for electroplating. 6,331,237, Cl. 205-98.000.

Angel, David C.: *See—*
Grossman, Franklin C.; Angel, David C.; and Seidel, David A., 6,332,213, Cl. 717-4.000.

Angelopoulos, Marie; Dimitrakopoulos, Christos Dimitrios; Furman, Bruce Kenneth; Graham, Teresita Ordonez; and Lien, Shui-Chih Alan, to International Business Machines Corporation. Patterns of electrically conducting polymers and their application as electrodes or electrical contacts. 6,331,356, Cl. 428-411.100.

Anjum, Mohammed; Stuber, Alan L.; and Burki, Ibrahim K., to Advanced Micro Devices, Inc. Active region implant methodology using indium to enhance short channel performance of a surface channel PMOS device. 6,331,458, Cl. 438-197.000.

Annema, Anne J.: *See—*
Widdershoven, Franciscus P.; Annema, Anne J.; Storms, Maurits M. N.; and Pelgrom, Marcellinus J. M., 6,331,947, Cl. 365-185.080.

Anritsu Company: *See—*
Wong, Vincent W. C.; Oldfield, William W.; and Harvey, Kenneth C., 6,331,769, Cl. 324-132.000.

Anthony, Anthony A. Paired multi-layered dielectric independent passive component architecture resulting in differential and common mode filtering with surge protection in one integrated package. 6,331,926, Cl. 361-56.000.

Anthony, Wendell W.: *See—*
Grandcolas, Michael L.; Anthony, Wendell W.; Law, Patrick; Moss, Leslie; Petach, Teresa A.; and Tompkins, Peter, 6,332,131, Cl. 705-35.000.

AOA Apparatebau Gauting GmbH: *See—*
Karlsson, Kent; and Kechele, Karl, 6,330,725, Cl. 4-431.000.

Aoki, Shinji: *See—*
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Aono, Kiyomi: *See—*
Tajima, Hiroki; Koizumi, Yutaka; Aono, Kiyomi; Abe, Tsutomu; Karita, Seiichiro; Okazaki, Takeshi; Omata, Kouichi; and Kubota, Masahiko, 6,331,051, Cl. 347-65.000.

Aoyama, Taizo: *See—*
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Apple Computer, Inc.: *See—*
Meier, John R.; Sullivan, John; and Mercer, Paul, 6,331,863, Cl. 345-684.000.

Applied Materials, Inc.: *See—*
Smick, Theodore H.; Farley, Marvin; Ryding, Geoffrey; Satoh, Shu; and Rose, Peter, 6,331,713, Cl. 250-497.100.
Ye, Yan; Ionov, Pavel; Zhao, Allen; Hsieh, Peter Chang-Lin; Ma, Diana Xiaobing; Yan, Chun; and Yuan, Jie, 6,331,380, Cl. 430-318.000.

Applied Research Systems ARS Holding NV: *See—*
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Arai, Atsushi: *See—*
Yokoi, Katsuyuki; Nakata, Kazuhiro; Arai, Atsushi; and Yanagi, Haruyuki, 6,331,898, Cl. 358-1.900.

Arai, Kunio: *See—*
Nakahara, Koichi; Fujii, Takahisa; Miki, Wataru; Nagami, Kenzoh; and Arai, Kunio, 6,331,320, Cl. 424-725.000.

Arai, Yasunori: *See—*
Sekiya, Shigenobu; Matsuo, Hiroyuki; Takahashi, Keiichi; and Arai, Yasunori, 6,330,928, Cl. 180-242.000.

Araki, Keiji: *See—*
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Aravantinos, Dimitrios; Aravantinos, Katina; and Murphy, Harold R. Visual stimulation cane for Parkinson's Disease sufferers. 6,330,888, Cl. 135-66.000.

Aravantinos, Katina: *See—*
Aravantinos, Dimitrios; Aravantinos, Katina; and Murphy, Harold R., 6,330,888, Cl. 135-66.000.

Arayashiki, Akifumi; Oyamada, Ouichi; and Hirata, Shin-Ichi, to Kokusai Electric Co., Ltd. Method of coding image data. 6,332,001, Cl. 375-240.000.

Arch Development Corporation: *See—*
Parmacek, Michael S.; and Solway, Julian, 6,331,527, Cl. 514-44.000.

Archer Daniels Midland Company: *See—*
Mani, K. N., 6,331,236, Cl. 204-525.000.

Arenas, Jaime E.: *See—*
Laing, Lance G.; Arenas, Jaime E.; Cload, Sharon T.; Lillie, James W.; and Pakula, Andrew A., 6,331,392, Cl. 435-6.000.

Argent Automotive Systems, Inc.: *See—*
Autterson, Christopher S., 6,331,335, Cl. 428-40.100.

Arita, Hiroshi, to Canon Kabushiki Kaisha. Focus detecting device and automatic focusing camera. 6,332,061, Cl. 396-104.000.

ARM Limited: *See—*
Elwood, Matthew Paul; and Hinds, Christopher Neal, 6,332,186, Cl. 711-217.000.

Arman, Bayram; and Bonaquist, Dante Patrick, to Praxair Technology, Inc. Compression system for cryogenic refrigeration with multicomponent refrigerant. 6,330,811, Cl. 62-643.000.

Armantrout, Jeffrey A.: *See—*
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Armstrong, Katherine: *See—*
Rubin-Wilson, Beth; Guo, Lining; Skokut, Tom; Young, Scott; Folkerts, Otto; Armstrong, Katherine; and Cowen, Neil M., 6,331,664, Cl. 800-298.000.

Armstrong, Kenneth K.: *See—*
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Arnold, David J., Jr.: *See—*
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Arnold, Steven: *See—*
Zhao, Wei; Arnold, Steven; Noerpel, Anthony; and Roos, Dave, 6,332,069, Cl. 455-12.100.

Arnold, William Allen; and Incavo, Joseph Alan, to Goodyear Tire & Rubber Company, The. Method of detecting expansion vessel leakage. 6,330,821, Cl. 73-40.000.

Aronowitz, Sheldon; Puchner, Helmut; Kapre, Ravindra A.; and Kimball, James P., to LSI Logic Corporation. Formation of integrated circuit structure using one or more silicon layers for implantation and out-diffusion in formation of defect-free source/drain regions and also for subsequent formation of silicon nitride spacers. 6,331,468, Cl. 438-287.000.

Arora, Gulshan K.; Groninger, Donn A.; Leech, Francis; and Hobbs, Bobby J., to AlliedSignal, Inc. Oil sump buffer seal. 6,330,790, Cl. 60-39.080.

Art Recherches et Technologies Avancees Inc./Art Advanced Research Technologies, Inc.: *See—*
Painchaud, Yves; and Mailloux, Alain, 6,332,093, Cl. 600-476.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
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Asahi, Nobuyuki: *See—*
Kamada, Kazuo; Koyama, Shoichi; Asahi, Nobuyuki; Suzuki, Toshiyuki; Shiohama, Eiji; Sugimoto, Masaru; Yamamoto, Shohei; Hashizume, Jiro; Akiniwa, Taishi; and Tanaka, Takashi, 6,331,063, Cl. 362-237.000.

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Asai, Yasuyuki: *See—*
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Asakura, Kyoshin: *See—*
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Ashida, Kenichi: *See—*
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Ashigaki, Shigeo: *See—*
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ASM America, Inc.: *See—*
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Aspect Telecommunications Corporation: *See—*
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Asterisk, Inc.: *See—*
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AstroVision, Inc.: *See—*
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Asustek Computer, Inc.: *See—*
Yo, Yu-Shi; Fang, Tsung-Hsing; and Ou, Teh-Chuan, 6,330,996, Cl. 248-694.000.

AT&T Corp.: *See—*
Cvetkovic, Zoran; and Daubechies, Ingrid, 6,331,831, Cl. 341-131.000.
Jain, Ajay, 6,332,164, Cl. 709-235.000.

ATI International, SRL: *See—*
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Gould, David Allen; and Vrabel, Mark E., 6,331,852, Cl. 345-419.000.

Atlantic Research Corporation: *See—*
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Atmel Corporation: *See—*
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Atmur, Robert James, to Boeing Company, The. Pulse drive angle measurement system and method. 6,331,759, Cl. 318-661.000.

Atofina Research: *See—*
Dupire, Marc; and Michel, Jacques, 6,331,265, Cl. 264-289.300.

Augustin, Andreas, to U.S. Philips Corporation. Recording and/or reproducing device having a tape pull-out element and a coupling element and having guide means for these two parts. 6,330,983, Cl. 242-332.400.

Austin, Donald G. Wood bending jig. 6,330,894, Cl. 144-269.000.

AutoGas Systems, Inc.: *See—*
Nicholson, G. Randy, 6,332,128, Cl. 705-14.000.

Automated Laser Corporation: *See—*
DePrisco, Joseph; Good, Brad; Hogeston, Kermit; and Lahey, Brent, 6,331,691, Cl. 219-121.680.

Automobile, Peugeot: *See—*
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Automobiles Citroen: *See—*

Hĕrvé, Perrault; and Fabrice, Goly, 6,330,938, Cl. 188-158.000.

Automotive Technologies International Inc.: *See*—
Breed, David S., 6,331,014, Cl. 280-730.100.

Autonetworks Technologies Ltd.: *See*—
Miyazaki, Sho; and Ichioka, Tetsuo, 6,331,124, Cl. 439-587.000.

Autterson, Christopher S., to Argent Automotive Systems, Inc. Self-adhesive wire strap and methods of constructing and utilizing same. 6,331,335, Cl. 428-40.100.

Au-Yeung, Vincent; Guo, Qing-Dong; and Wang, Xing Long, to U.S.A. Kaifa Technology, Inc. Optical circulator. 6,331,912, Cl. 359-484.000.

Avansys, LLC: *See*—
Mezey, James J., Sr., 6,331,212, Cl. 118-725.000.

Avecia Limited: *See*—
Carr, Kathryn; Holbrook, Mark; and Ferguson, Ian, 6,331,204, Cl. 106-31.270.

Aventis CropScience GmbH: *See*—
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Aventis CropScience SA: *See*—
Bulet, Philippe; Hetru, Charles; Hoffmann, Jules; and Sabatier, Laurence, 6,331,522, Cl. 514-10.000.
Decor, Rachel; Mioskowski, Charles; Schmutz, Marc; and Wagner, Alain, 6,331,434, Cl. 435-458.000.

Aventis Pharma Deutschland GmbH: *See*—
Wehner, Volkmar; Stilz, Hans Ulrich; Schmidt, Wolfgang; and Seiffge, Dirk, 6,331,552, Cl. 514-341.000.
Weichert, Andreas; Albus, Udo; and Jansen, Hans-Willi, 6,331,546, Cl. 514-260.000.

Aventis Pharma S.A.: *See*—
Bouchard, Hervé; Bourzat, Jean-Dominique; and Commerçon, Alain, 6,331,635, Cl. 548-215.000.

Avis, Graham. Discontinuous receive operation in a wireless terminal. 6,332,086, Cl. 455-574.000.

Avram, Hector: *See*—
Zhang, Weigno; Kaufman, Leon; and Avram, Hector, 6,332,088, Cl. 600-410.000.

Axiva GmbH: *See*—
Schierholz, Wilfried; Lauschke, Götz; Ott, Stefan; Schmidt, Ulrich; and Hein, Peter, 6,331,072, Cl. 366-338.000.

Aylott, Jonathan W.; Chen-Esterlit, Zoe; Friedl, Jon H.; Kopelman, Raoul; Savvateev, Vadim N.; and Shinar, Joseph, to Iowa State University Research Foundation, Inc.; and University of Michigan, The Regents of the. Optical sensors and multisensor arrays containing thin film electroluminescent devices. 6,331,438, Cl. 436-172.000.

Azechi, Syuuichi; Taira, Yujiro; and Yoshida, Takeo, to Shin-Etsu Chemical Co., Ltd. Addition curing type liquid silicone rubber compositions. 6,331,588, Cl. 524-493.000.

Azi International SRL: *See*—
Rogers, Philip J.; and Wu, Xiaoqing, 6,331,854, Cl. 345-473.000.

Azima, Henry Firouz; Colloms, Martin; and Harris, Neil John, to New Transducers Limited. Acoustic device. 6,332,029, Cl. 381-152.000.

Baba, Masakazu: *See*—
Yokoyama, Takashi; and Baba, Masakazu, 6,331,238, Cl. 205-135.000.

Babcock, Douglas J.: *See*—
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Babel, Henry W.: *See*—
Hasegawa, Mark M.; Daneman, Steven A.; DeJesus, Ronaldo R.; and Babel, Henry W., 6,331,357, Cl. 428-446.000.

Backer, George: *See*—
Bennington, Gerard E.; Backer, George; Green, Shawn; Cooper, Bill; Spell, Dave; Rogers, Rosetta; and Davis, Bruce, 6,331,877, Cl. 348-731.000.

Backus, Alan L.; and Popeil, Ron. Rotisserie oven having a heat shield. 6,330,855, Cl. 99-447.000.

Badylak, Stephen F.; Record, Rae Denese; and McPherson, Timothy B., to Purdue Research Foundation. Galactosidase modified submucosal tissue. 6,331,319, Cl. 424-551.000.

Bae, Ki-Soon, to Samsung Electronics Co., Ltd. Method for fabricating semiconductor device. 6,331,377, Cl. 430-313.000.

Baez, Julio A.: *See*—
Ng, John S.; Wang, Ping T.; Baez, Julio A.; Liu, Chin; Anderson, Dennis K.; Lawson, Jon P.; Erb, Bernhard; Wieczorek, Joseph; Mucciariello, Gennaro; Vanzanella, Fortunato; Kunda, Sastry A.; Letendre, Leo J.; Pozzo, Mark J.; Sing, Yuen-Lung L.; and Yonan, Edward E., 6,331,622, Cl. 540-41.000.

Bagley, Rebecca G.: *See*—
Scheule, Ronald K.; Bagley, Rebecca G.; Eastman, Simon J.; Cheng, Seng H.; Marshall, John; Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Chang, Chau-Dung; Hubbard, S. Catherine; Johnson, Duane E.; Maneval, Daniel C.; Shepard, H. Michael; and Gregory, Richard J., 6,331,524, Cl. 514-44.000.

Baglin, John Edward Eric; Kellock, Andrew John; Terris, Bruce David; Weller, Dieter Klaus; and Folks, Liesl, to International Business Machines Corporation; and University of New Orleans Foundations. Patterned magnetic recording media containing chemically-ordered FePt of CoPt. 6,331,364, Cl. 428-694.00T.

Bai, Wei: *See*—
Choy, Kwang-Leong; and Bai, Wei, 6,331,330, Cl. 427-475.000.

Baillargeon, Paul D.; and Klughart, Kevin, to Baillargeon, Paul D. Fall protection system and method. 6,330,931, Cl. 182-18.000.

Baily, Frederick G.; Rentz, Lawrence E.; Retzlaff, Klaus M.; and Turnquist, Norman A., to General Electric Company. Brush seal mounting in supporting groove using flat spring with bifurcated end. 6,331,006, Cl. 277-355.000.

Bajor, Tamas: *See*—
Hirth, Klaus P.; Mann, Elaina; Shawyer, Laura K.; Ullrich, Axel; Szekely, Istvan; Bajor, Tamas; Haimichael, Janis; Orfi, Laszlo; Levitzki, Alex; Gazit, Aviv; Tang, Peng Cho; and Lammers, Reiner, 6,331,555, Cl. 514-378.000.

Baker Hughes Incorporated: *See*—
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Baker, Jannie Lea: *See*—
Venkatesan, Aranapakam Mudumbai; Grosu, George Theodore; and Baker, Jannie Lea, 6,331,563, Cl. 514-459.000.

Balaji, Vitukudi Narayanaiyengar: *See*—
Chan, Ming Fai; Wu, Chengde; Raju, Bore Gowda; Kogan, Timothy; Kois, Adam; Verner, Erik Joel; Castillo, Rosario Silvestre; Yalamoori, Venkatachalapathi; and Balaji, Vitukudi Narayanaiyengar, 6,331,637, Cl. 548-241.000.

Balch, William J.; Hogan, Michael E.; and Mendoza, Leopoldo G., to Genometrix Genomics Incorporated. Multiplexed molecular analysis apparatus and method. 6,331,441, Cl. 436-518.000.

Ball Semiconductor, Inc.: *See*—
Vekris, Evangellos; Patel, Nainesh J.; and Hanabe, Murali, 6,331,477, Cl. 438-542.000.

Balloni, William J.: *See*—
Debbins, Josef P.; Prorok, Richard J.; and Balloni, William J., 6,331,776, Cl. 324-309.000.

Bally Gaming, Inc.: *See*—
Heidel, Raymond J.; Hill, Rodney; Taxon, Thomas N.; and McAllister, Lawerence, 6,332,099, Cl. 700-231.000.

Balsevich, J. John. Seed treatments for improving fall seeding survival of crucifers. 6,331,504, Cl. 504-100.000.

Ban, Koichi: *See*—
Takahashi, Koji; Shirota, Yuichi; Ban, Koichi; Sugi, Hikaru; Niimi, Yasuhiko; Kishita, Hiroshi; Yamanaka, Yasushi; and Naka, Masayoshi, 6,330,909, Cl. 165-202.000.

Ban, Shinichi, to Minolta Co., Ltd. Printing apparatus with job interrupt capabilities and control method thereof. 6,332,170, Cl. 710-6.000.

Ban, Wataru: *See*—
Mikame, Daisuke; Ban, Wataru; and Matsunaga, Hideo, 6,331,149, Cl. 473-330.000.

Bandera, Daniel Quinto; Bregman, Mark F.; Gopal, Ajei S.; and Singhal, Sandeep, to International Business Machines Corporation. Systems, methods and computer program products for providing time and location specific advertising via the internet. 6,332,127, Cl. 705-14.000.

Bando, Tatsuo; Kato, Shitashi; Okutomi, Hiroshi; and Toyoda, Kiyoshi, to Matsushita Graphic Communication Systems, Inc. Structured document preparation apparatus and structured document preparation method. 6,332,039, Cl. 382-195.000.

Banse, Hideo: *See*—
Munakata, Takeo; Kikuchi, Naoshi; Shinohara, Takashi; Banse, Hideo; Kaneko, Takao; Akasaka, Hiroji; Aida, Yukikatsu; Shimokura, Naoyoshi; Ishikubo, Yuji; Okada, Tetsuya; and Suzuki, Tamezo, 6,331,677, Cl. 174-128.100.

Baran, Michael S., to Rockwell Automation Technologies, Inc. Controller assembly having a base unit with a dockable processor unit. 6,331,935, Cl. 361-686.000.

Baranov, Vladimir: *See*—
Svenson, Robert H.; Semenov, Serguei Y.; and Baranov, Vladimir, 6,332,087, Cl. 600-407.000.

Baranowski, John F.: *See*—
Dunk, Michael P.; McCormick, Garrett P.; and Baranowski, John F., 6,331,687, Cl. 218-140.000.

Barber, Lyle C. Lawn aerating and weeding tools. 6,330,921, Cl. 172-22.000.

Bardy, Gust H., to Cardiac Intelligence Corporation. System and method for providing patient status feedback via an automated patient care system with speech-based wellness monitoring. 6,331,160, Cl. 600-300.000.

Barham, Steven T: *See*—
Giallorenzi, Thomas R; Kingston, Samuel C; Steagall, Robert W; Smith, Patrick J; and Barham, Steven T, 6,332,008, Cl. 375-356.000.

Barkan, Edward: *See*—
Bridgelall, Raj; Shepard, Howard; Barkan, Edward; Sanders, Robert; Maiman, Mitch; Dvorkis, Paul; Boriotti, Joseph; Krichever, Mark; Gurevich, Vladimir; and Breytman, Alexander, 6,330,973, Cl. 235-462.450.

Barkataki, Shan; Dousette, Patricia J.; Frederick, Dale F.; Harte, Stuart H.; and Johnson, Gary R., to Litton Systems, Inc. Method of creating and using system-independent software components. 6,332,210, Cl. 717-1.000.

Barker, Brandy Cyan; Kubinski, Donald Chester; Moffatt, Rodney Taylor; and Dyrlund, Christopher David, to Goodyear Tire & Rubber Company, The. Method and apparatus for storing strip material. 6,330,984, Cl. 242-536.000.

Barone, Stephen. Motion detectors and occupancy sensors based in displacement detection. 6,331,964, Cl. 367-128.000.

Barrios, Carlos M.: *See*—
Ross, Michael J.; Segars, James E.; Cummings, William G.; Barrios, Carlos M.; and Gampa, Ravishanke V., 6,332,098, Cl. 700-226.000.

Barth, Phillip W.: *See*—
Wang, Tak Kui; Barth, Phillip W.; and Goedert, Michel G., 6,331,678, Cl. 174-253.000.

Bartley, Bradley E.; Blass, James R.; and Gibson, Dennis H., to Caterpillar Inc. Engine with hydraulic fuel injection and ABS circuit using a single high pressure pump. 6,330,875, Cl. 123-446.000.

Bartyzel, Bernd, to Dell USA, L.P. Apparatus and method for securing a heat sink to an electronic component in a computer system. 6,331,937, Cl. 361-687.000.

Baseler, Christian: *See*—
Spannagel, Wilfried; Diedrich, Karin; Dudda, Olaf; and Baseler, Christian, 6,331,683, Cl. 177-245.000.

Basell Technology Company bv: *See*—
Galimberti, Maurizio; and Albizzati, Enrico, 6,331,600, Cl. 526-160.000.

Baserga, Renato; Sell, Christian; and Rubin, Raphael, to Thomas Jefferson University. Method of inhibiting the proliferation and causing the differentiation of cells with IGF-1 receptor antisense oligonucleotides. 6,331,526, Cl. 514-44.000.

BASF Aktiengesellschaft: *See*—
Blankertz, Heinrich-Josef; Grenacher, Armin Volker; Sauer, Friedrich; Schwahn, Harald; Schönmann, Willi; and Röper, Michael, 6,331,656, Cl. 568-451.000.
Huff, Jürgen; Steuerle, Ulrich; Meixner, Hubert; Ehle, Beate; Paulus, Wolfgang; Lux, Jürgen Alfred; and Häussling, Lukas, 6,331,519, Cl. 510-475.000.
Meffert, Helmut; Sanner, Axel; Berndl, Gunther; Ruchatz, Folker; Kolter, Karl; and Bauer, Kurt Heinz, 6,331,294, Cl. 424-78.030.
Volkert, Otto; and Pittrich, Klaus, 6,331,577, Cl. 521-159.000.

BASF Corporation: *See*—
Ramesh, Swaminathan; and Green, Marvin L., 6,331,596, Cl. 525-329.900.

BASF NOF Coatings Co., Ltd.: *See*—
Tsunoda, Takeshi; and Mitsumune, Shinji, 6,331,326, Cl. 427-202.000.

Baskey, Michael E.; Brice, Frank W.; Glassen, Steven G.; Hefferon, Eugene P.; Ratcliff, Bruce H.; Stagg, Arthur J.; and Valley, Stephen R., to International Business Machines Corporation. Self-contained queues with associated control information for receipt and transfer of incoming and outgoing data using a queued direct input-output device. 6,332,171, Cl. 710-39.000.

Basler AG: *See*—
Kaupp, Ansgar, 6,331,889, Cl. 356-239.100.

Bass, Victor J.; and Vines, Landon, to Koninklijke Philips Electronics N.V. (KPENV). CMP pad conditioner arrangement and method therefor. 6,331,136, Cl. 451-56.000.

Bastyr, Charles A.; and Nebolon, Joseph F., to DJ Orthopedics, LLC. Orthopaedic brace having one-piece cuff. 6,331,169, Cl. 602-16.000.

Basu, Samit; and Bresler, Yoram, to University of Illinois, The Board of Trustees of the. Fast hierarchical reprojection algorithms for 3D radon transforms. 6,332,035, Cl. 382-128.000.

Baszczynski, Christopher L.; Lyznik, Leszek Alexander; and Gordon-Kamm, William J., to Pioneer Hi-Bred International, Inc. Method for directional stable transformation of eukaryotic cells. 6,331,661, Cl. 800-278.000.

Batcho, Andrew David; Hennessy, Bernard Michael; and Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. Vitamin D_3 analogs. 6,331,642, Cl. 552-653.000.

Battelle Memorial Institute: *See*—
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Batz-Sohn, Christoph: *See*—
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Bauer, Anthony J.: *See*—
Callahan, Thomas R.; Bauer, Anthony J.; Moehling, Charles; Evers, Ronald R.; and Toussaint, Brian A., 6,330,862, Cl. 105-226.000.

Bauer, Klaus: *See*—
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Bauer, Kurt Heinz: *See*—
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Baum, Thomas H.: *See*—
Xu, Chongying; Baum, Thomas H.; Carl, Ralph J.; and Sturm, Edward A., 6,331,211, Cl. 118-719.000.

Baumgartner, Albert; Sahli, Richard; Gasser, Daniel; Muller, Paul; and Untersander, Walter, to SFS Industrie Holding AG. Apparatus for driving screws mountable on a drive unit. 6,330,841, Cl. 81-57.370.

Baumunk, Mary B.: *See*—
Phillips, Quintin T.; Haines, Robert E.; Baumunk, Mary B.; Heusinkveld, Jake; and Boockholdt, Darius, 6,332,062, Cl. 399-12.000.

Bautista, Derrick; and Collins-Thompson, David, to Nestec S.A. Device and method for cleaning and sanitizing a food reservoir. 6,331,432, Cl. 435-264.000.

Bautista, Edward V., Jr.; Hamilton, Darlene G.; Lee, Weng Fook; Chen, Pau-Ling; and Wong, Keith H., to Advanced Micro Devices, Inc. Method and system for embedded chip erase verification. 6,331,951, Cl. 365-185.220.

Baweja, Gunjeet; and Kumar, Harsh, to Intel Corporation. Branch prediction architecture. 6,332,189, Cl. 712-238.000.

Baxter International Inc.: *See*—
El Sayyid, Waleed Mutasem; and Casterline, Cameron Scott, 6,331,252, Cl. 210-646.000.
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Baxter, Kevin: *See*—
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Bayer Aktiengesellschaft: *See*—
Fahrig, Thomas; Gerlach, Irene; Horváth, Ervin; and Jork, Reinhard, 6,331,561, Cl. 514-456.000.
Klinksiek, Bernd; Mahiout, Said; Nothelle, Ricarda-Christine; Hamann, Hans-Jürgen; and Sdebik, Jürgen, 6,331,314, Cl. 424-450.000.
Linker, Karl-Heinz; Findeisen, Kurt; Andree, Roland; Drewes, Mark-Wilhelm; Lender, Andreas; Schallner, Otto; Haas, Wilhelm; Santel, Hans-Joachim; and Dollinger, Markus, 6,331,507, Cl. 504-244.000.

Bayer Corporation: *See*—
Cohen, Beri; DeYoung, Thomas W.; Draganovic, Krunoslav Esteban; and Purpura, Paul E., 6,331,437, Cl. 436-43.000.

Bayly, Robert M.: *See*—
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BCF Designs Limited: *See*—
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Be Here Corporation: *See*—
Furlan, John Louis Warpakowski; and Driscoll, Edward, Jr., 6,331,869, Cl. 348-36.000.

Beach, David H.; Demetrick, Douglas J.; Serrano, Manuel; and Hannon, Gregory J., to Cold Spring Harbor Laboratory. Cell-cycle regulatory proteins, and uses related thereto. 6,331,390, Cl. 435-6.000.

Beacher, Brent F.: *See*—
Liu, Hsin-Tuan; Dickman, Robert B.; Krabacher, Kenneth W.; Steinmetz, Gregory T.; Beacher, Brent F.; and Doloresco, Bryan K., 6,331,100, Cl. 416-238.000.

Beal, Jean-Luc: *See*—
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Bearak, Justin Blair: *See*—
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Beasley, Ellen M.: *See*—
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Beaufils, Jean-Marc: *See*—
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Beaverson, Gregory K.; and Smith, Bart A., to York International Corporation. System and method for controlling an HVAC system using a flash mini-card. 6,330,806, Cl. 62-201.000.

Beazer, Eric Peter: *See*—
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Bech, Lisbeth: *See*—
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Bechtel BWXT Idaho, LLC: *See*—
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Beck, Christopher Clemmett Macleod; Berke, Jonathan Michael; Johnstone, Joel A; Mitchell, Robin Marie; Powers, James Karl; Sidell, Mark Franklin; and Knuff, Charles Dazler, to Genesys Telecommunications Laboratories, Inc. Method and apparatus for providing media-independent self-help modules within a multimedia communication-center customer interface. 6,332,154, Cl. 709-204.000.

Becker, David S., to Micron Technology, Inc. Semiconductor structure useful in a self-aligned contact etch and method for making same. 6,331,495, Cl. 438-774.000.

Becker, Michael S.: *See*—
Young, C. David; Krueger, Roy W.; Becker, Michael S.; Harwell, Henry O.; and Stevens, James A., 6,331,973, Cl. 370-337.000.

Becker, Neil M.; Clarke, Duncan; Peterson, Chuck; Quinones, Albert A.; Haldeman, Paul; Armstrong, Kenneth K.; Wilson, Victor; Wilson, Bruce; Thompson, Gary; and Colvan, William P., to Advanced Cardiovascular Systems, Inc. Bleed back control assembly and method. 6,331,176, Cl. 604-533.000.

Beckham, Scott; Emis, Dale; and Patel, Nilesh, to Stryker Corporation. Waste filter and manifold system. 6,331,246, Cl. 210-136.000.

Beckman Coulter, Inc.: *See*—
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Becton Dickinson and Company: *See*—
Powell, Kenneth G.; Monahan, Larry A.; and Sage, Burton H., Jr., 6,331,266, Cl. 264-313.000.

Beder, Douglas S., to 314613 B.C. Ltd. Hair regrowth method and apparatus. 6,332,097, Cl. 607-139.000.

Behr Climate Systems, Inc.: *See*—
Cummings, Robert W.; and Ta, Thien D., 6,330,802, Cl. 62-129.000.

Beiersdorf AG: *See*—
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Beigler, Myron A.: *See*—
Bessette, Steven M.; and Beigler, Myron A., 6,331,572, Cl. 514-731.000.

Belema, Makonen; Zusi, Fred C.; and Tramposch, Kenneth M., to Bristol-Myers Squibb Company. Active enantiomer of RARγ-specific agonist. 6,331,570, Cl. 514-563.000.

Belle, Robert K. Drain cover locking device. 6,330,724, Cl. 4-288.000.

Bell-Greenstreet, Daryl L. Automatic medication dispenser. 6,330,957, Cl. 221-3.000.

Belliveau, Richard S. Method and apparatus for digital communications with multiparameter light fixtures. 6,331,756, Cl. 315-316.000.

Belliveau, Richard S. Multiparameter device control apparatus and method. 6,331,813, Cl. 340-310.010.

Bellot, Emile M., Jr.: *See*—
Brugnara, Carlo; Halperin, Jose; Bellot, Emile M., Jr.; Froimowitz, Mark; Lombardy, Richard John; Clifford, John J.; Gao, Ying-Duo; Haidar, Reem M.; Kelleher, Eugene W.; Kher, Falguni M.; Moussa, Adel M.; Sachdeva, Yesh P.; Sun, Minghua; and Taft, Heather N., 6,331,564, Cl. 514-520.000.

Belser, Karl A., to Seagate Technology. System and method to compensate for data defects within a magneto-optical computer memory device. 6,331,968, Cl. 369-47.140.

Benayoun, Alain: *See*—
Albano, Andre; Michel, Patrick; Benayoun, Alain; and Le Pennec, Jean-Francois, 6,331,814, Cl. 340-310.010.

Bennett, Brian D.; Goeddel, David; Lee, James M.; Matthews, William; Tsai, Siao Ping; and Wood, William I., to Genentech, Inc. Protein tyrosine kinase agonist antibodies. 6,331,302, Cl. 424-146.100.

Bennett, Easton. Heat exchanger for a motor vehicle exhaust. 6,330,910, Cl. 165-297.000.

Bennett, James: *See*—
Digman, Michael J.; Walker, James D.; and Bennett, James, 6,330,782, Cl. 56-15.800.

Bennett, James D.: *See*—
Bunte, Alan G.; Danielson, Arvin D.; Durbin, Dennis A.; and Bennett, James D., 6,330,975, Cl. 235-472.010.

Bennington, Gerard E.; Backer, George; Green, Shawn; Cooper, Bill; Spell, Dave; Rogers, Rosetta; and Davis, Bruce, to TV Guide Magazine Group, Inc. Electronic television program guide schedule system and method. 6,331,877, Cl. 348-731.000.

Benthos, Inc.: *See*—
Raymond, Samuel O., 6,330,823, Cl. 73-52.000.

Beraud, Christophe; and Sakowicz, Roman, to Cytokinetics, Inc. Motor proteins and methods for their use. 6,331,424, Cl. 435-196.000.

Beraud, Christophe; and Freedman, Richard, to Cytokinetics, Inc. Motor proteins and methods for their use. 6,331,430, Cl. 435-252.300.

Beresnev, Leonid: *See*—
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Berger, Donald E., Jr.: *See*—
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Berger, Kenneth: *See*—
Millon, Joel; Berger, Kenneth; Readdy, Robert; and Samaroo, Derek, 6,331,331, Cl. 427-536.000.

Berger, Richard M., to Filtrona Richmond, Inc. Heat and moisture exchanger comprising hydrophilic nylon and methods of using same. 6,330,883, Cl. 128-201.130.

Bergman, Carl, to Flow Holdings GmbH, (SAGL) LLC. Method for hot-isostatic pressing of parts. 6,331,271, Cl. 419-49.000.

Bergman, Orit: *See*—
Gever, Eval; Hermoni, Nir; Bergman, Orit; Tayar, Gil; Reshef, Eilon; Gill, Doron; Feuerstein, Addy; Caneti, Yaron; Oppenheim, Roy; Etam, Eran; Shpeizer, Zohar; Borer, Yoav; Livine, Eyal; Kikin, Ruth; Zuckerman, Oren; and Kaas, Ron, 6,331,861, Cl. 345-629.000.

Bergman, Richard G.: *See*—
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Bergner, Jeffrey W.: *See*—
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Berke, Jonathan Michael: *See*—
Beck, Christopher Clemmett Macleod; Berke, Jonathan Michael; Johnstone, Joel A; Mitchell, Robin Marie; Powers, James Karl; Sidell, Mark Franklin; and Knuff, Charles Dazler, 6,332,154, Cl. 709-204.000.

Berken, Bradley John: *See*—
Hahn, John Timothy; Venturino, Michael Barth; Berken, Bradley John; St. Louis, Raymond Gerard; and Datta, Paul Joseph, 6,330,735, Cl. 19-296.000.

Berliner, David L.; and Monti-Bloch, Luis, to Pherin Pharmaceuticals, Inc. Steroids as neurochemical stimulators of the VNO to alleviate pain. 6,331,534, Cl. 514-177.000.

Berman, Phillip W.; and Nakamura, Gerald R., to Genentech, Inc. HIV envelope polypeptides. 6,331,404, Cl. 435-7.100.

Berndl, Gunther: *See*—
Meffert, Helmut; Sanner, Axel; Berndl, Gunther; Ruchatz, Folker; Kolter, Karl; and Bauer, Kurt Heinz, 6,331,294, Cl. 424-78.030.

Bernier, William E.; and Bundga, Edward G., to International Business Machines Corporation. Conductive adhesive having a palladium matrix interface between two metal surfaces. 6,331,119, Cl. 439-91.000.

Berry, Robert Francis; Hussain, Riaz Y.; John, Chester Charles, Jr.; Levine, Frank Eliot; and Urquhart, Robert John, to International Business Machines Corporation. General event stamping scheme. 6,332,117, Cl. 702-187.000.

Berta, Jodie: *See*—
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Bertin & Cie: *See*—
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Bertness, Kevin I., to Midtronics, Inc. Energy management system for automotive vehicle. 6,331,762, Cl. 320-134.000.

Bertness, Kevin I., to Midtronics, Inc. Electronic battery tester. 6,332,113, Cl. 702-63.000.

Besemer, Arie Cornelis; and Thornton, Jeffrey Wilson, to SCA Hygiene Products Zeist B.V. Superabsorbent material and method for producing said material. 6,331,619, Cl. 536-105.000.

Beser, Nurettin B., to 3COM Corporation. Method and system for bundling data in a data-over-cable system. 6,331,987, Cl. 370-486.000.

Beskitt, William Daniel; Harty, Michael J.; Eastman, Jeffrey; and Phelps, Richard J., to Diebold, Incorporated. Currency recycling system and method for automated banking machine. 6,331,000, Cl. 271-3.010.

Bessette, Steven M.; and Beigler, Myron A., to Ecosmart Technologies, Incorporated. Non-hazardous pest control. 6,331,572, Cl. 514-731.000.

Bethea, Clyde George: *See*—
Adams, Laura Ellen; Bethea, Clyde George; Eskildsen, Lars Erik; Nykolak, Gerald; People, Rossevelt; and Tanbun-Ek, Tawee, 6,331,908, Cl. 359-188.000.

Betts, Richard M., to MCY III Trust. Protective helmet restraint and head and neck stabilizing system. 6,330,722, Cl. 2-416.000.

Beuzard, Yves: *See*—
Brugnara, Carlo; Beuzard, Yves; Galacteros, Frederick; and De Francheschi, Lucia, 6,331,557, Cl. 514-423.000.

Bhagwat, Shripad S.; McKie, Jeffrey A.; and Khammungkhune, Sak, to Signal Pharmaceuticals, Inc. Compounds and methods for modulation of estrogen receptors. 6,331,562, Cl. 514-457.000.

Bhowmik, Siddhartha; Merchant, Sailesh Mansinh; Oh, Minseok; Roy, Pradip Kumar; and Sen, Sidhartha, to Lucent Technologies, Inc. Titanium-tantalum barrier layer film and method for forming the same. 6,331,484, Cl. 438-648.000.

Bic Corporation: *See*—
Bradley, Creg G.; Hopper, Teresa B.; and Gabriele, Peter D., 6,331,352, Cl. 428-354.000.

Bichsel-Kessler, by Wiltrud Elfriede, legal representative: *See*—
Kisters, Friedrich; Nöfer, Reinhold; Kessler, Günther, deceased; Bichsel-Kessler, by Wiltrud Elfriede, legal representative; Kisters, by Gerlinde Margarete, legal representative; and Kessler-Wetzig, by Ingrid Hildegund, legal representative, 6,331,569, Cl. 514-561.000.

Bieringer, Hermann: *See*—
Kehne, Heinz; Willms, Lothar; Bauer, Klaus; Bieringer, Hermann; and Rosinger, Christopher, 6,331,506, Cl. 504-214.000.

Bingham, Paul M.; and Zachar, Zuzana, to Research Foundation of State University of New York at Stony Brook, The. Lipoic acid derivatives and their use in treatment of disease. 6,331,559, Cl. 514-440.000.

Biosense, Inc.: *See*—
Acker, David E.; Govari, Assaf; Fenster, Maier; and Shapiro, Avishai, 6,332,089, Cl. 600-424.000.

Biosignal LTD: *See*—
Hirth, Klaus P.; Mann, Elaina; Shawyer, Laura K.; Ullrich, Axel; Szekely, Istvan; Bajor, Tamas; Haimichael, Janis; Orfi, Laszlo; Levitzki, Alex; Gazit, Aviv; Tang, Peng Cho; and Lammers, Reiner, 6,331,555, Cl. 514-378.000.

Biotechnology Research and Development Corporation: *See*—
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Birrell, Andrew; Laing, William; and Kumar, Puneet, to Compaq Computer Corporation. Low power system and method for playing compressed audio data. 6,332,175, Cl. 711-112.000.

Bischoff, Lutz, to Deere & Company. Straw chopper for a combine. 6,331,142, Cl. 460-112.000.

Bittner, Wilfried, to Concord Camera Corp. Camera with combined film advance/rewind mechanism. 6,331,082, Cl. 396-413.000.

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BJ Services Company: *See*—
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Bjø rnvad, Mads Eskelund; Clausen, Ib Groth; Schülein, Martin; Bech, Lisbeth; Østergaard, Peter Rahbek; and Sjøholm, Carsten, to Novozymes A/S. Bacterial galactanases and use thereof. 6,331,426, Cl. 435-201.000.

Blackman, Jeffrey R.; Ruhe, Thomas W.; Jackson, Larry A.; McCue, Thomas E., Jr.; and O'Hara, Kevin, to Hewlett-Packard Company. Print recording apparatus having modular autoduplex mechanism. 6,332,068, Cl. 399-364.000.

Blair, Julian: *See*—
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Blakelock, Thomas R.; Butman, Thomas R., Jr.; and Iversen, Alan M., to General Electric Company. Adjustable generator stator slot wedge system. 6,331,745, Cl. 310-214.000.

Blalock, Guy T.: *See*—
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Blanchard, Richard A. Phase leg with depletion-mode device. 6,331,794, Cl. 327-112.000.

Blankenship, George D., to Lincoln Global, Inc. Fuel cell operated welder. 6,331,694, Cl. 219-137.0PS.

Blankertz, Heinrich-Josef; Grenacher, Armin Volker; Sauer, Friedrich; Schwahn, Harald; Schönmann, Willi; and Röper, Michael, to BASF Aktiengesellschaft. Hydroformylation process. 6,331,656, Cl. 568-451.000.

Blass, James R.: *See—*
Bartley, Bradley E.; Blass, James R.; and Gibson, Dennis H., 6,330,875, Cl. 123-446.000.

Blish, Richard C., II; Hatchard, Colin; and Morgan, Ian, to Advanced Micro Devices, Inc. Method to improve chip scale package electrostatic discharge performance and suppress marking artifacts. 6,331,735, Cl. 257-777.000.

Bloch, William; Werner, William E.; Egholm, Michael; and Myers, Rene L., to PE Corporation (NY). Compositions of solvents and high concentrations of nucleic acid analogs. 6,331,618, Cl. 536-25.400.

Bloom, Jeffrey A.; Cox, Ingemar J.; and Miller, Matthew L., to Signafy, Inc. Method for data preparation and watermark insertion. 6,332,194, Cl. 713-176.000.

Blumenkranz, Stephen J.: *See—*
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Board of Regents, The University of Texas System: *See—*
Hung, Mien-Chie; Yan, Duen-Hwa; Wen, Yong; and Spohn, Bill, 6,331,284, Cl. 424-1.110.
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Boardman, William Hunter, IV; Bosley, Dewey Reed; and Sapiro, Edward Paul, to General Electric Company. Application of a chiller in an apparatus for cooling a generator/motor. 6,330,809, Cl. 62-434.000.

Bochmann, Harald; and Tanneberger, Volkmar, to Robert Bosch GmbH. Method and data receiver device for reception of a radio signal containing correction data for a global navigation satellite system. 6,332,070, Cl. 455-12.100.

Boder, Eric T.: *See—*
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Boe, Craig L., to Micron Technology, Inc. Apparatus for mounting an element. 6,330,991, Cl. 248-200.000.

Boeckman, Brian M.; and Mellott, Lex A., to JLG Industries, Inc. Scissor lift control apparatus and method. 6,330,933, Cl. 182-63.100.

Boeing Company, The: *See—*
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Bohlander, Ralf; Jaensch, Sven; and Springer, Dirk, to Cognis Deutschland GmbH. Method for producing glucoprotamines. 6,331,607, Cl. 528-312.000.

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Boleda, Miquel; Doval, Jose J; Serra, Albert; and Gros, Xavier, to Hewlett-Packard Company. Techniques for robust dot placement error measurement and correction. 6,331,038, Cl. 347-9.000.

Bolken, Todd O.; Peters, David L.; Tandy, Patrick W.; and Cobbley, Chad A., to Micron Technology, Inc. Method for fabricating semiconductor packages using mold tooling fixture with flash control cavities. 6,331,453, Cl. 438-127.000.

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Boral Bricks (NSW) Pty. Ltd.: *See—*
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Borer, Yoav: *See—*
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Borja, Anita Arriola. Forearm mounted storage pouch for securing articles and utilizing a personal communicator. 6,330,961, Cl. 224-222.000.

Boroditsky, Marc D.; and Manza, Marc B., to Passlogix, Inc. Generalized user identification and authentication system. 6,332,192, Cl. 713-168.000.

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Bossen, Douglas Craig; Chiarot, Kevin Arthur; Jaisimha, Namratha Rajasekharaiah; and Saha, Avijit, to International Business Machines Corporation. Recovery mechanism for L1 data cache parity errors. 6,332,181, Cl. 711-155.000.

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Bouchard, Hervé; Bourzat, Jean-Dominique; and Commerçon, Alain, to Aventis Pharma S.A. Taxoids, their preparation and pharmaceutical compositions containing them. 6,331,635, Cl. 548-215.000.

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Bouchard, Hervé; Bourzat, Jean-Dominique; and Commerçon, Alain, 6,331,635, Cl. 548-215.000.

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Bowman, Mark: *See—*
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Bowman-Amuah, Michel K., to Accenture, LLP. Method for providing communication services over a computer network system. 6,332,163, Cl. 709-231.000.

Box, Steven Anthony: *See—*
Allen, John Timothy; and Box, Steven Anthony, 6,330,911, Cl. 166-77.510.

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Bradley, Creg G.; Hopper, Teresa B.; and Gabriele, Peter D., to Bic Corporation. Correction tape having dye migration blocking properties. 6,331,352, Cl. 428-354.000.

Branchek, Theresa: *See—*
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Brandt, Per-Olof, to Telefonaktiebolaget LM Ericsson. Integrated antenna switch having amplifier. 6,332,071, Cl. 455-82.000.

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Branston, David-Walter; Lins, Guenter; and Verieger, Jobst, to Siemens Aktiengesellschaft. Method and device for producing a powder aerosol and use thereof. 6,331,689, Cl. 219-121.590.

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Breed Automotive Technology, Inc.: *See—*
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Breytman, Alexander: *See*—
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Bridgelall, Raj; Shepard, Howard; Barkan, Edward; Sanders, Robert; Maiman, Mitch; Dvorkis, Paul; Boriotti, Joseph; Krichever, Mark; Gurevich, Vladimir; and Breytman, Alexander, to Symbol Technologies, Inc. Integrated code reading systems including tunnel scanners. 6,330,973, Cl. 235-462.450.

Bridgestone Corporation: *See*—
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Bridgestone Sports Co., Ltd.: *See*—
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Briggs, Robert E.; and Tatum, Fred M., to Biotechnology Research and Development Corporation. LKTA deletion mutant of *P. haemolytica* . 6,331,303, Cl. 424-255.100.

Bringmann, Gerhard; Boyd, Michael R.; and Wenzel, Matthias, to United States of America, Health and Human Services. Dimeric arylisoquinoline alkaloids and derivatives thereof. 6,331,630, Cl. 546-140.000.

Bristol Compressors, Inc.: *See*—
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Bristol-Myers Squibb: *See*—
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Bristol-Myers Squibb Company: *See*—
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Britek Footwear Development, LLC: *See*—
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British Nuclear Fuels PLC: *See*—
Orr, Christopher Henry; Luff, Craig Janson; Dockray, Thomas; Macarthur, Duncan Whittemore; Bounds, John Alan; and Koster, James E., 6,331,706, Cl. 250-385.100.
Orr, Christopher Henry; Luff, Craig Janson; Dockray, Thomas; and Macarthur, Duncan Whittemore, 6,331,707, Cl. 250-387.000.

British Telecommunications public limited company: *See*—
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Broadcom Corporation: *See*—
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Brodbeck, Kevin J.; and Shen, Theodore T., to ALZA Corporation. Injectable depot gel composition and method of preparing the composition. 6,331,311, Cl. 424-425.000.

Bronfeld, Joshua: *See*—
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Brookhart, Craig: *See*—
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Brooks, Jerry M.: *See*—
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Broom, Ward P.: *See*—
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Brousseau, Ivan: *See*—
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Brown, Adam R.; Hueting, Raymond J. E.; and Hurkx, Godefridus A. M., to U.S. Philips Corporation. Method of manufacturing a trench gate field effect semiconductor device. 6,331,467, Cl. 438-270.000.

Brown, Algie C.; Welty, Carl T.; Williams, Henry G.; Williams, David M.; and Dabbs, James M., to Footmark, Inc. Foot analyzer. 6,331,893, Cl. 356-601.000.

Brown, David C. Diode-pumped gas lasers. 6,331,993, Cl. 372-55.000.

Brown, Julia: *See*—
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Brown, Todd Allen; and Rhode, Douglas Scott, to Ford Global Technologies, Inc. Roll over detection for an automotive vehicle. 6,332,104, Cl. 701-1.000.

Brownlee, John A., III. Dwelling structure adapted to enclose an oversized vehicle. 6,330,766, Cl. 52-173.100.

Brugnara, Carlo; Beuzard, Yves; Galacteros, Frederick; and De Francheschi, Lucia, to Children's Medical Center Corporation; Insitut National de la Sante et de la Reicherche Medicale (Inserm); and Establissement Public Assistance Publique Hopitaux de Paris. Use of divalent cations for inhibiting erythrocyte dehydration in vivo. 6,331,557, Cl. 514-423.000.

Brugnara, Carlo; Halperin, Jose; Bellot, Emile M., Jr.; Froimowitz, Mark; Lombardy, Richard John; Clifford, John J.; Gao, Ying-Duo; Haidar, Reem M.; Kelleher, Eugene W.; Kher, Falguni M.; Moussa, Adel M.; Sachdeva, Yesh P.; Sun, Minghua; and Taft, Heather N., to Ion Pharmaceuticals, Inc. Use of triaryl methane compounds for inhibiting unwanted cellular proliferation associated with inflammatory disease. 6,331,564, Cl. 514-520.000.

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Brun, Kevin. Compact head power driven ratchet tool. 6,330,842, Cl. 81-57.390.

Brundage, Gary L. Electrical component system with rotatable electrical contacts. 6,331,117, Cl. 439-21.000.

Brunella, Alfred J., to Pacific Flo-Rite, Inc. Coupling for flex pipe, rigid pipe and flexible hose. 6,331,020, Cl. 285-179.000.

Brunelli, Shon; Kennedy, Timothy; and Ludwig, Bryan, to Micron Technology, Inc. Brush alignment platform. 6,330,729, Cl. 15-102.000.

Brunelli, Shon; Kennedy, Timothy; and Ludwig, Bryan, to Micron Technology, Inc. Brush alignment method. 6,331,213, Cl. 134-6.000.

Brunswick Corporation: *See*—
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Brusso, Peter C.: *See*—
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Bryant, Charles P.: *See*—
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Taylor, Peter William; Luzio, John Paul; and Bryant, Jonathan Mark, 6,331,425, Cl. 435-200.000.

Bryce, Jonathan, to Griplock Pty Ltd. Sporting equipment binding apparatus. 6,331,007, Cl. 280-11.300.

Bryn, Klaus: *See*—
Klaveness, Jo; Rongved, Pål; Høgset, Anders; Tolleshaug, Helge; Cuthbertson, Alan; Hoff, Lars; Bryn, Klaus; Hellebust, Halldis; and Solbakken, Magne, 6,331,289, Cl. 424-9.520.

Buazza, Omar M.: *See*—
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Buchaca, John D.: *See*—
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Buchan, Robert: *See*—
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Buehler, Jane E.: *See*—
Kardokus, Janine K.; Wu, Chi tse; Parfeniuk, Christopher L.; and Buehler, Jane E., 6,331,234, Cl. 204-298.130.

Bueschken, Wilfried: *See*—
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Bugeja, Alex R.: *See*—
Song, Bang-Sup; and Bugeja, Alex R., 6,331,830, Cl. 341-121.000.

Bulet, Philippe; Hetru, Charles; Hoffmann, Jules; and Sabatier, Laurence, to Aventis CropScience SA. Antibacterial and antifungal peptide. 6,331,522, Cl. 514-10.000.

Bundga, Edward G.: *See*—
Bernier, William E.; and Bundga, Edward G., 6,331,119, Cl. 439-91.000.

Bunte, Alan G.; Danielson, Arvin D.; Durbin, Dennis A.; and Bennett, James D., to Intermec IP Corp. Combined code reader and digital camera using a common photodetector. 6,330,975, Cl. 235-472.010.

Bunyan, Michael H.: *See*—
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Buosi, Francesco: *See*—
Genova, Calogero; Giammasi, Giuseppe; and Buosi, Francesco, 6,331,511, Cl. 510-119.000.

Burazin, Mark Alan: *See*—
Hermans, Michael Alan; Burazin, Mark Alan; Hada, Frank Stephen; and Hong, Sung Ho, 6,331,230, Cl. 162-207.000.

Burbank, Fred H.; Jones, Michael L.; and Lubock, Paul, to SenoRx, Inc. Breast biopsy system and method. 6,331,166, Cl. 600-567.000.

Burchell, Ann; and Hume, Robert, to University of Dundee, The. Prenatal diagnostic methods. 6,331,395, Cl. 435-6.000.

Burdgick, Steven Sebastian; and Itzel, Gary Michael, to General Electric Company. Apparatus and methods for impingement cooling of an undercut region adjacent a side wall of a turbine nozzle segment. 6,331,096, Cl. 415-115.000.

Burger, Jeffrey A.: *See*—
Titizian, John H.; Burger, Jeffrey A.; and Kim, Young H., 6,331,931, Cl. 361-306.300.

Burke, Barry E.; and Savoye, Eugene D., to Massachusetts Institute of Technology. High-precision blooming control structure formation for an image sensor. 6,331,873, Cl. 348-314.000.

Burke, Michael A.; Freyer, Paula D.; Hebbar, Mohan A.; Seth, Brij B.; Swartzbeck, Gary W.; and Zagar, Thomas Walter, to Siemens Westinghouse Power Corporation. Turbine blades made from multiple single crystal cast superalloy segments. 6,331,217, Cl. 148-522.000.

Burke, Peter A.: *See*—
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Burke, W. Michael: *See*—
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Burki, Ibrahim K.: *See*—
Anjum, Mohammed; Stuber, Alan L.; and Burki, Ibrahim K., 6,331,458, Cl. 438-197.000.

Burnham, Martin Karl Russel; Lonetto, Michael Arthur; and Warren, Patrick Vernon, to SmithKline Beecham Corp. Polynucleotides encoding a novel pyrR homolog. 6,331,410, Cl. 435-69.100.

Burns, Arthur G.: *See*—
Oglesbee, John Wendell; Burns, Arthur G.; and More, Georgina, 6,331,764, Cl. 320-136.000.

Burns, David Hugh; Leonardi, Lorenzo; and Oppenheimer, Luis, to McGill University; and University of Manitoba. Diagnosis of edema. 6,332,091, Cl. 600-475.000.

Burridge, Michael John: *See*—
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Burrows, Ward C., to Ancra International, LLC. Wheel chock for use in transporting a cycle on a vehicle. 6,331,094, Cl. 410-30.000.

Burstein Technologies, Inc.: *See*—
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Cabilly, Shmuel; Heyneker, Herbert L.; Holmes, William E.; Riggs, Arthur D.; and Wetzel, Ronald B., to Genentech, Inc. Methods of producing immunoglobulins, vectors and transformed host cells for use therein. 6,331,415, Cl. 435-69.600.

Cabot Corporation: *See*—
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Cabral, Cyril, Jr.; Carruthers, Roy Arthur; Harper, James McKell Edwin; Lavoie, Christian; Roy, Ronnen Andrew; and Wang, Yun Yu, to International Business Machines Corporation. Method and structure for reduction of contact resistance of metal silicides using a metal-germanium alloy. 6,331,486, Cl. 438-682.000.

Cadence Design Systems, Inc.: *See*—
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Calandro, Christopher John. Presentation football construction. 6,331,151, Cl. 473-599.000.

California Institute of Technology: *See*—
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California Micro Devices Corporation: *See*—
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Whitworth, Adam; and Richiuso, Dominick, 6,331,787, Cl. 326-30.000.

Calise, Anthony J.; Prasad, Jonnalagadda V. R.; and Horn, Joseph F., to Georgia Tech Research Corporation. Neural network based automatic limit prediction and avoidance system and method. 6,332,105, Cl. 701-3.000.

Callahan, Thomas R.; Bauer, Anthony J.; Moehling, Charles; Evers, Ronald R.; and Toussaint, Brian A., to Citicorp USA, Inc. Dead lever lug. 6,330,862, Cl. 105-226.000.

Callaway Golf Company: *See*—
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Campbell, Kevin P.: *See*—
Rambukkana, Anura; Fischetti, Vincent A.; and Campbell, Kevin P., 6,331,405, Cl. 435-7.200.

Campbell, Paul W., to ATI International, SRL. Method and apparatus for modifying memory accesses utilizing TLB entries. 6,332,184, Cl. 711-207.000.

Canare Electric Co., Ltd.: *See*—
Kano, Hiroyuki, 6,331,716, Cl. 257-14.000.

Caneti, Yaron: *See*—
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Canon Kabushiki Kaisha: *See*—
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Tajima, Hiroki; Koizumi, Yutaka; Aono, Kiyomi; Abe, Tsutomu; Karita, Seiichiro; Okazaki, Takeshi; Omata, Kouichi; and Kubota, Masahiko, 6,331,051, Cl. 347-65.000.
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Cao, Densen, to Cao Group, Inc. Curing light system useful for curing light activated composite materials. 6,331,111, Cl. 433-29.000.

Cao Group, Inc.: *See*—
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Cardiac Intelligence Corporation: *See*—
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Cardiodyne, Inc.: *See*—
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Cardiothoracic Systems, Inc.: *See*—
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Caren, Robert P.; Ekchian, Leon; and Ekchian, Jack A., to Litex, Inc. Method and apparatus for using free radicals to reduce pollutants in the exhaust gases from the combustion of a fuel. 6,330,794, Cl. 60-274.000.

Carl, Ralph J.: *See*—
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Carolinas Heart Institute, The: *See—*
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Carpenter, Charles T.; Bayly, Robert M.; and Stager, Bradley R., to Key Knife, Inc. Log flaking and loading method and apparatus. 6,330,895, Cl. 144-373.000.
Carr, Brian W.; Handorf, Donald F.; Sporrer, Scott; Jensen, Ryan D.; Merfeld, Nick; and Mathis, Mark D., to Gary W. Clem, Inc. Unloading system for particulate materials bins. 6,330,767, Cl. 52-192.000.
Carr, Kathryn; Holbrook, Mark; and Ferguson, Ian, to Avecia Limited. Printing ink composition. 6,331,204, Cl. 106-31.270.
Carr, Thomas Joseph; Desjarlais, Renee Louise; Gallagher, Timothy Francis; Halbert, Stacie Marie; Oh, Hye-Ja; Thompson, Scott Kevin; Veber, Daniel Frank; Yamashita, Dennis Shinji; and Yen, Jack Hwekwo, to SmithKline Beecham Corporation. Protease inhibitors. 6,331,542, Cl. 514-237.800.
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Carrig, James J.: *See—*
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Carroll, Frank E.; Traeger, Robert H.; Mendenhall, Marcus H.; Waters, James W.; Edwards, Glenn; and Brau, Charles A., to Vanderbilt University. System and method for producing pulsed monochromatic X-rays. 6,332,017, Cl. 378-119.000.
Carruthers, Roy Arthur: *See—*
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Carta Proteomics, Inc.: *See—*
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cawitec AG: *See—*
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CBD Technologies Ltd.: *See—*
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Cell Therapeutics, Inc.: *See—*
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Chan, Kevin T., to Broadcom Corporation. Analog discrete-time filtering for unshielded twisted pair data communication. 6,332,004, Cl. 375-257.000.
Chan, Ming Fai; Wu, Chengde; Raju, Bore Gowda; Kogan, Timothy; Kois, Adam; Verner, Erik Joel; Castillo, Rosario Silvestre; Yalamoori, Venkatachalapathi; and Balaji, Vitukudi Narayanaiyengar, to Texas Biotechnology Corporation. N-Alkyl, N-Alkenyl, N-Alkynyl, N-Aryl and N-fused bicyclo or tricyclo thienyl-, furyl-,and Pyrrolyl-sulfonamides and derivatives thereof that modulate the activity of endothelin. 6,331,637, Cl. 548-241.000.
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Chang, Tony. Rain canopy apparatus for a stroller. 6,330,898, Cl. 160-24.000.
Chao, Ming-Hui. Stand for an electric pot. 6,330,849, Cl. 99-288.000.
Charles Schwab & Co., Inc.: *See—*
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Charmasson, Henri J. A.: *See—*
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Chase, Lee A., to Lacks Industries, Inc. Flexible lamp mounting. 6,331,068, Cl. 362-549.000.
Chase, Wayne O., to Roedy Black Publishing Inc. System for connotative analysis of discourse. 6,332,143, Cl. 707-100.000.
Chatterjea, Probir. Adaptive cooling system control system. 6,330,799, Cl. 60-456.000.
Chatterji, Jiten; Cromwell, Roger S.; Reddy, Baireddy R.; and King, Bobby J., to Halliburton Energy Services, Inc. Resilient well cement compositions and methods. 6,330,917, Cl. 166-295.000.
Chaudhari, Praveen; Galligan, Eileen Ann; Doyle, James Patrick; Lacey, James Andrew; Lien, Shui-Chih Alan; Nakano, Hiroki; and Lu, Minhua, to International Business Machines Corporation. Method for making a liquid crystal alignment layer. 6,331,381, Cl. 430-320.000.
Chaudhari, Raghunath Vitthal; Puthenmadathil, Jayasree; and Gupte, Sunil Purushotham, to Council of Scientific and Industrial Research. Catalyst system containing a semilabile anionic ligand and a use of such catalyst system to produce α, β, -unsaturated carboxylic acids and their esters. 6,331,502, Cl. 502-162.000.
Chen, Augustin T.; Kestyn, Paul E.; and Zhao, Hong, to Solutia Inc. Low gloss coating. 6,331,582, Cl. 523-400.000.
Chen, Chang Than. Length adjustable foldable door assembly. 6,330,902, Cl. 160-231.200.
Chen, Chuan Tsai. Structure of the main shaft of an umbrella. 6,330,887, Cl. 135-16.000.
Chen, Dongquing: *See—*

Kaufman, Arie E.; Liang, Zhengrong; Wax, Mark R.; Wan, Ming; and Chen, Dongquing, 6,331,116, Cl. 434-262.000.

Chen, James C.; Huston, Darrin; and Wilkerson, Brian D., to Light Sciences Corporation. Contactless energy transfer apparatus. 6,331,744, Cl. 310-171.000.

Chen, James T.; and Yagi, Atsuo, to Nippon Precision Circuits, Inc. Single transistor E^2prom memory device with controlled erasing. 6,331,724, Cl. 257-365.000.

Chen, Jian: *See*—
Haddon, Robert C.; and Chen, Jian, 6,331,262, Cl. 252-502.000.

Chen, Johnny C.: *See*—
Kuo, Tiao-Hua; Kasa, Yasushi; and Chen, Johnny C., 6,331,950, Cl. 365-185.180.

Chen, Lee; and Yvonne, Chen. RF-grounded sub-Debye neutralizer grid. 6,331,701, Cl. 250-251.000.

Chen, Pau-Ling: *See*—
Bautista, Edward V., Jr.; Hamilton, Darlene G.; Lee, Weng Fook; Chen, Pau-Ling; and Wong, Keith H., 6,331,951, Cl. 365-185.220.

Chen, Ray T.: *See*—
Ai, Jun; Popelek, Jan; Li, Yao; and Chen, Ray T., 6,332,051, Cl. 385-33.000.

Chen, Shen-Li, to United Microelectronics Corp. Method for manufacturing low power high efficiency non-volatile erasable programmable memory cell structure. 6,331,463, Cl. 438-257.000.

Chen, Songhua: *See*—
Thern, Holger F.; and Chen, Songhua, 6,331,775, Cl. 324-303.000.

Chen, Susan Hsuching: *See*—
Gupta, Subhash; and Chen, Susan Hsuching, 6,331,732, Cl. 257-752.000.

Chen, Wenzong: *See*—
Grois, Igor; Chen, Wenzong; and Matasek, Jeffrey A., 6,331,079, Cl. 385-53.000.

Chen-Esterlit, Zoe: *See*—
Aylott, Jonathan W.; Chen-Esterlit, Zoe; Friedl, Jon H.; Kopelman, Raoul; Savvateev, Vadim N.; and Shinar, Joseph, 6,331,438, Cl. 436-172.000.

Cheng, Howard H.: *See*—
Van Hook, Timothy J.; Cheng, Howard H.; DeLaurier, Anthony P.; Gossett, Carroll P.; Moore, Robert J.; Shepard, Stephen J.; Anderson, Harold S.; Princen, John; Doughty, Jeffrey C.; Pooley, Nathan F.; Sheppard, Byron; Takeda, Genyo; and Kato, Shuhei, 6,331,856, Cl. 345-503.000.

Cheng, Koon-Ming, to Ruey Yuan Co., Ltd. Buckle joint. 6,330,736, Cl. 24-656.000.

Cheng, Seng H.: *See*—
Scheule, Ronald K.; Bagley, Rebecca G.; Eastman, Simon J.; Cheng, Seng H.; Marshall, John; Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Chang, Chau-Dung; Hubbard, S. Catherine; Johnson, Duane E.; Maneval, Daniel C.; Shepard, H. Michael; and Gregory, Richard J., 6,331,524, Cl. 514-44.000.

Cheng, Stanley Kin-Sui, to Meyer Mfg Co. Method for applying silkscreen pattern to cookware. 6,331,328, Cl. 427-261.000.

Cheng, Yao-Yi: *See*—
Tsai, Chia-Shiung; Cheng, Yao-Yi; and Tao, Hun-Jan, 6,331,480, Cl. 438-624.000.

Cheng, Yu-Ling: *See*—
Turner, Josephine; and Cheng, Yu-Ling, 6,331,578, Cl. 523-105.000.

Chern, Michael: *See*—
Rodov, Vladimir; Hsueh, Wayne Y. W.; Chang, Paul; and Chern, Michael, 6,331,455, Cl. 438-138.000.

Cherukuri, Satyam Choudary; Demers, Robert Richard; Fan, Zhong Hui Hugh; Levine, Aaron W.; McBride, Sterling Edward; and Zanzucchi, Peter John, to Orchid BioSciences, Inc. Device for selective distribution of liquids. 6,331,439, Cl. 436-174.000.

Chesebrough-Pond' s USA Co., division of Conopco, Inc.: *See*—
Davies, Richard Huw; Savill, Derek Guy; and Jones, Paul, 6,330,730, Cl. 15-167.100.

Chesney, Charles F.; Riggs, Michael Terry; and Lemaire, Charles A., to Hypertension Diagnostics, Inc. Method and apparatus for fabricating a pressure-wave sensor with a leveling support element. 6,331,161, Cl. 600-485.000.

Chess, Leonard: *See*—
Lederman, Seth; Chess, Leonard; and Yellin, Michael J., 6,331,433, Cl. 435-325.000.
Lederman, Seth; Chess, Leonard; and Yellin, Michael J., 6,331,615, Cl. 536-23.530.

Chevron U.S.A. Inc.: *See*—
Kibby, Charles L., 6,331,573, Cl. 518-706.000.

Chiarot, Kevin Arthur: *See*—
Bossen, Douglas Craig; Chiarot, Kevin Arthur; Jaisimha, Namratha Rajasekharaiah; and Saha, Avijit, 6,332,181, Cl. 711-155.000.

Children' s Medical Center Corporation: *See*—
Brugnara, Carlo; Beuzard, Yves; Galacteros, Frederick; and De Francheschi, Lucia, 6,331,557, Cl. 514-423.000.

Chin, Richard; and Subramanian, Raghu, to Hewlett-Packard Company. Test results checking via predictive-reactive emulation. 6,332,201, Cl. 714-28.000.

Chino, Kenji; and Iwanaga, Yoshihisa, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Structure for supporting cylinders. 6,331,010, Cl. 280-124.112.

Chiou, Henry C.; and Carlo, Dennis J., to Immune Response Corporation, The. Targeted delivery of genes encoding interferon. 6,331,525, Cl. 514-44.000.

Chiron Corporation: *See*—
Hallewell, Robert A.; and Mullenbach, Guy T., 6,331,421, Cl. 435-189.000.

Chisso Corporation: *See*—
Ushiyama, Masashi, 6,331,429, Cl. 435-243.000.

Chiu, Patrick: *See*—
Moran, Thomas P.; van Melle, William J.; Kurtenbach, Gordon P.; and Chiu, Patrick, 6,332,147, Cl. 707-500.100.

Chiu, Tien-Pao: *See*—
Shih, Chih-Hsing; and Chiu, Tien-Pao, 6,331,322, Cl. 426-315.000.

Cho, Chang-Ho, to Samsung Electronics Co., Ltd. Flat panel display device having a wide adjusting range of a visual angle. 6,330,993, Cl. 248-371.000.

Cho, Ho Yeol, to Samsung Electronics Co., Ltd. Semiconductor memory device and layout method thereof. 6,331,963, Cl. 365-230.030.

Cho, Sun-Hyung, to Hyundai Motor Company. Hinge assembly for automobile hoods. 6,330,734, Cl. 16-376.000.

Cho, Won-bong; Lee, Sang-youl; and Hwang, Ho-woong, to Samsung Electronic Co., Ltd. E-mail processing method. 6,332,156, Cl. 709-206.000.

Chobotov, Michael V., to TriVascular Inc. Layered endovascular graft. 6,331,191, Cl. 623-1.440.

Choh, Richard T.: *See*—
Gambale, Richard A.; Forcucci, Stephen J.; Weiser, Michael F.; Choh, Richard T.; and Forde, Sean, 6,331,185, Cl. 623-1.100.

Choi, Chang-Ho: *See*—
Park, Jong-Myung; Choi, Chang-Ho; Oh, Jung-Kwon; and Hong, Seung-Min, 6,331,598, Cl. 526-87.000.

Choi, Oong; and Ingle, Fred E., to Wheelchair Carrier, Inc. Lightweight motorized wheelchair. 6,331,013, Cl. 280-647.000.

Chomet, Paul S.; Frey, Monika; and Gierl, Alfons, to Dekalb Genetics Corporation. Maize DIMBOA biosynthesis genes. 6,331,660, Cl. 800-278.000.

Chooi, Simon: *See*—
Li, Jianxun; Zhou, Mei Sheng; Xu, Yi; and Chooi, Simon, 6,331,479, Cl. 438-618.000.

Choy, Kwang-Leong; and Bai, Wei, to Imperial College of Science, Technology, and Medicine. Film or coating deposition and powder formation. 6,331,330, Cl. 427-475.000.

Chu, Wen-Ting: *See*—
Sung, Kuo-Tung; Chu, Wen-Ting; and Wu, Huoy-Jong, 6,331,721, Cl. 257-317.000.

Chua, Boon Pen. Fluid extraction apparatus. 6,331,141, Cl. 454-344.000.

Chua, Leon O.: *See*—
Yang, Tao; and Chua, Leon O., 6,331,974, Cl. 370-342.000.

Chuan Sheng Corporation, Inc.: *See*—
Wang, Mei-Cheng, 6,330,906, Cl. 165-80.300.

Chugai Seiyaku Kabushiki Kaisha: *See*—
Esaki, Toru; Makino, Toshihiko; Nishimura, Yoshikazu; and Nagafuji, Toshiaki, 6,331,553, Cl. 514-352.000.

Chung, Suk-jae: *See*—
Jang, Jin; and Chung, Suk-jae, 6,331,209, Cl. 117-90.000.

Chung, Yung-Chiang, to Industrial Technology Research Institute. Order-changing microfluidic mixer. 6,331,073, Cl. 366-341.000.

Cianciara, Wojciech; Fischer, Gerhard; and Haug, Thomas, to Siemens Aktiengesellschaft. Method for the cylinder-selective knock control of an internal combustion engine. 6,330,874, Cl. 123-406.200.

Ciba Specialty Chemicals Corporation: *See*—
Rohringer, Peter; Geoffroy, André; Burkhard, Andreas; Marti, Erwin; Schreiber, Werner; and Zelger, Josef, 6,331,626, Cl. 544-193.200.

Cibro Technologies Ltd.: *See*—
Sity, Refael; and Bronfeld, Joshua, 6,331,145, Cl. 463-22.000.

Cincinnati Incorporated: *See*—
Smyth, Dale, 6,331,693, Cl. 219-121.840.

Cipolla, Jeffrey L., to United States of America, Navy. Missile support and alignment assembly. 6,330,866, Cl. 114-238.000.

Cirrus Logic, Inc.: *See*—
Geldman, John S.; Ho, Son H.; Estakhrf, Petro; and Schadegg, John J., 6,332,182, Cl. 711-156.000.
Swanson, Eric J.; and Vishakhadatta, Diwakar, 6,331,785, Cl. 326-30.000.

Cisco Technology, Inc.: *See*—
Iverson, Timothy J., 6,332,172, Cl. 710-68.000.

Citicorp USA, Inc.: *See*—
Callahan, Thomas R.; Bauer, Anthony J.; Moehling, Charles; Evers, Ronald R.; and Toussaint, Brian A., 6,330,862, Cl. 105-226.000.

Citron, Diane M.; and Goldstein, Ellie J. C., to SmithKline Beecham Corporation. Methods of use of quinolone compounds against anaerobic pathogenic bacteria. 6,331,550, Cl. 514-312.000.

Ciuca, Zazu; Woods, Patrick; Palmer, Roger; Ruggles, Brian; and Kuhar, Otto, to Newell Window Furnishings, Inc. Cordless balanced window covering. 6,330,899, Cl. 160-170.00R.

Clariant GmbH: *See*—
Geissler, Ulrich, 6,331,587, Cl. 524-459.000.
Herrmann, Hans-Friedrich; and Hohner, Gerd, 6,331,590, Cl. 525-55.000.

Clark Equipment Company: *See*—
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Becker, Neil M.; Clarke, Duncan; Peterson, Chuck; Quinones, Albert A.; Haldeman, Paul; Armstrong, Kenneth K.; Wilson, Victor; Wilson, Bruce; Thompson, Gary; and Colvan, William P., 6,331,176, Cl. 604-533.000.

Clausen, Ib Groth: *See*—
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Cleckner, Michael Dale: *See*—
Lu, Pang-Chia; and Cleckner, Michael Dale, 6,331,346, Cl. 428-195.000.

Clement, Jean Yves, to International Business Machines Corporation. Electrical connector with reduced crosstalk for high frequency signals. 6,331,120, Cl. 439-418.000.

Cleveland Clinic Foundation, The: *See*—
Silverman, Robert H.; Williams, Bryan R. G.; and Der, Sandy, 6,331,396, Cl. 435-6.000.

Clifford, John J.: *See*—
Brugnara, Carlo; Halperin, Jose; Bellot, Emile M., Jr.; Froimowitz, Mark; Lombardy, Richard John; Clifford, John J.; Gao, Ying-Duo; Haidar, Reem M.; Kelleher, Eugene W.; Kher, Falguni M.; Moussa, Adel M.; Sachdeva, Yesh P.; Sun, Minghua; and Taft, Heather N., 6,331,564, Cl. 514-520.000.

Cload, Sharon T.: *See*—
Laing, Lance G.; Arenas, Jaime E.; Cload, Sharon T.; Lillie, James W.; and Pakula, Andrew A., 6,331,392, Cl. 435-6.000.

Clumpner, Michael: *See*—
Daly, Thomas J.; Clumpner, Michael; and O'Lenick, Anthony J., Jr., 6,331,648, Cl. 564-285.000.

Cobbley, Chad, to Micron Technology, Inc. Process for providing electrical connection between a semiconductor die and a semiconductor die receiving member. 6,331,221, Cl. 156-60.000.

Cobbley, Chad A.: *See*—
Bolken, Todd O.; Peters, David L.; Tandy, Patrick W.; and Cobbley, Chad A., 6,331,453, Cl. 438-127.000.

Coco, Geoffrey P.; and Reay, C. Phillip, to Onadime, Inc. Real-time multimedia visual programming system. 6,331,864, Cl. 345-763.000.

Coden, Michael H., to ADC Telecommunications, Inc. Telecommunication network with variable address learning, switching and routing. 6,331,985, Cl. 370-403.000.

Cogan, Adrian: *See*—
Thomas, Brian; Beaufils, Jean-Marc; Cogan, Adrian; Dallemange, Bernard; Gozlan, Gilles; Luan, Jiyuan; Thornton, Neill; and Toth, James, 6,331,763, Cl. 320-136.000.

Cognis Deutschland GmbH: *See*—
Bohlander, Ralf; Jaensch, Sven; and Springer, Dirk, 6,331,607, Cl. 528-312.000.

Cohen, Alon, to Vocaltec Communications Ltd. Apparatus and method for multi-station conferencing. 6,332,153, Cl. 709-204.000.

Cohen, Beri; DeYoung, Thomas W.; Draganovic, Krunoslav Esteban; and Purpura, Paul E., to Bayer Corporation. Automatic handler for feeding containers into and out of an analytical instrument. 6,331,437, Cl. 436-43.000.

Cohen, Donald M., to Alcon Laboratories, Inc. Tip for a liquefracture handpiece. 6,331,171, Cl. 604-27.000.

Colaco, Camilo: *See*—
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Cold Spring Harbor Laboratory: *See*—
Beach, David H.; Demetrick, Douglas J.; Serrano, Manuel; and Hannon, Gregory J., 6,331,390, Cl. 435-6.000.

Cole, Brian M.; Dower, William V.; and Oxman, Joel D., to 3M Innovative Properties Company. Optical fiber connector using colored photocurable adhesive. 6,331,080, Cl. 385-80.000.

Colgate Palmolive Company: *See*—
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Durbut, Patrick, 6,331,517, Cl. 510-426.000.
Gambogi, Joan; Fuller, Robert; and Berta, Jodie, 6,331,515, Cl. 510-424.000.
Millon, Joel; Berger, Kenneth; Readdy, Robert; and Samaroo, Derek, 6,331,331, Cl. 427-536.000.

Coll, Brian M., to Manufacturers' Services Ltd. Solder paste with a time-temperature indicator. 6,331,076, Cl. 374-102.000.

Collier, Matthew W.; Yao, Xian; and Bowers, Brian G., to Smith International, Inc. Polycrystalline cubic boron nitride cutting tool. 6,331,497, Cl. 501-96.400.

Collier, Zaitrarrio T.: *See*—
Khan, Azhar H.; Stiefel, James G.; Collier, Zaitrarrio T.; and Lee, Benjamin J., 6,332,150, Cl. 707-526.000.

Collin, Dominique: *See*—
Guilloud, Jean-Claude; Collin, Dominique; Julliard, Jacques; and Fumoux, Christine, 6,332,027, Cl. 381-71.100.

Collins, David Robert: *See*—
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Collins-Thompson, David: *See*—
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Colloms, Martin: *See*—
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Colonial Chemical INC: *See*—
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Colvan, William P.: *See*—
Becker, Neil M.; Clarke, Duncan; Peterson, Chuck; Quinones, Albert A.; Haldeman, Paul; Armstrong, Kenneth K.; Wilson, Victor; Wilson, Bruce; Thompson, Gary; and Colvan, William P., 6,331,176, Cl. 604-533.000.

Combi Corporation: *See*—
Nakamura, Keiichi; Kaneko, Tomihisa; and Ogura, Kazunao, 6,331,696, Cl. 219-386.000.

Commerç on, Alain: *See*—
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Commissariat a l'Energie Atomique: *See*—
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Compagnie Generale des Matieres Nucleaires: *See*—
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Compaq Computer Corporation: *See*—
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Dean, Jeffrey A.; Hicks, James E., Jr.; Waldspurger, Carl A.; and Weihl, William E., 6,332,178, Cl. 711-118.000.

Compaq Information Technologies Group, L.P.: *See*—
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Compuware Corporation: *See*—
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Conboy, Garth: *See*—
Sachs, James; Pomeroy, Thomas W.; Novicov, Aleksey; Conboy, Garth; Walter, Erik; Leshner, William S.; Duga, Brady; and Wotiz, Richard, 6,331,865, Cl. 345-776.000.

Concord Camera Corp.: *See*—
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Condea Augusta S.p.A.: *See*—
Genova, Calogero; Giammasi, Giuseppe; and Buosi, Francesco, 6,331,511, Cl. 510-119.000.

Conductus, Inc: *See*—
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Conexant Systems, Inc.: *See*—
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White, Stanley A.; Walley, Kenneth S.; Johnston, James W.; Henderson, P. Michael; Hale, Kelly H.; Andrews, Warner B., Jr.; and Siann, Jonathan I., 6,331,782, Cl. 324-763.000.

Conklin, Jeffrey; Foucher, David; and Foucher, Daniel, to TradeAccess, Inc. System and method for ordering sample quantities over a network. 6,332,135, Cl. 705-80.000.

Connors, Thomas: *See*—
D'Ambrogio, Robert; and Connors, Thomas, 6,331,516, Cl. 510-425.000.

Conrow, Raymond E.; and Klimko, Peter G., to Alcon Universal Ltd. Heteroatom-interrupted analogs of 15-hydroxyeicosatetraenoic acid and methods of use. 6,331,566, Cl. 514-549.000.

Conti, Peter S.; Alauddin, Mian M.; and Fissekis, John D., to University Advanced Bio-imaging Associates. 2'-deoxy-2'-fluoro-d-arabinofuranosyl pyrimidine nucleoside. 6,331,287, Cl. 424-1.890.

Continu-Forms Holdings PLC: *See*—
Walters, Stephen Arthur; and Finch, John, 6,331,017, Cl. 283-62.000.

Conveyor Technology Group Inc.: *See*—
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Summa, Gareth D.; and Smith, N. Duane, 6,330,953, Cl. 213-62.00R.

Conway, Thomas, to STMicroelectronics N.V. Data recovery system having offset compensation. 6,332,205, Cl. 714-746.000.

Cook, Duane; Murali, Venkatesan; Ramalingam, Suresh; and Vodrahalli, Nagesh, to Intel Corporation. Process for underfilling a controlled collapse chip connection (C4) integrated circuit package with an underfill material that is heated to a partial gel state. 6,331,446, Cl. 438-106.000.

Cooke, Howard: *See*—
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Cooke, Laurance: *See*—
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Coombs, Peter M; and Seay, James R., to Graoco (Japan) Ltd. Set binding, stapling and stacking apparatus. 6,330,999, Cl. 270-58.180.

Cooper, Bill: *See*—
Bennington, Gerard E.; Backer, George; Green, Shawn; Cooper, Bill; Spell, Dave; Rogers, Rosetta; and Davis, Bruce, 6,331,877, Cl. 348-731.000.

Cooper, David K. C.; and Koren, Eugen, to Integris Baptist Medical Center, Inc.; and Oklahoma Medical Research Foundation. Genetically engineered mammals for use as organ donors. 6,331,658, Cl. 800-14.000.

Cooper Industries Inc.: *See*—
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Cooper, Thomas G.: *See*—

Tierney, Michael J.; Cooper, Thomas G.; Julian, Chris A.; Blumenkranz, Stephen J.; Guthart, Gary S.; and Younge, Robert G., 6,331,181, Cl. 606-130.000.
Copelan, Herbert W. Self-contained double handhold for preventing false urine specimens. 6,331,278, Cl. 422-102.000.
Copperman, Max: *See*—
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Corisis, David J.; Brooks, Jerry M.; and Moden, Walter L., to Micron Technology, Inc. Stackable ball grid array package. 6,331,939, Cl. 361-784.000.
Cormican, Dale DeWayne. One piece molded ski apparatus. 6,331,008, Cl. 280-22.000.
Cornelius, Charles S.; Counts, Richard H.; Myers, W. Neill; Lackey, Jeffrey D.; Peters, Warren; Shadoan, Michael D.; Sparks, David L.; and Lawrence, Timothy W., to United States of America, National Aeronautics and Space Administration. Rocket engine thrust chamber assembly. 6,330,792, Cl. 60-257.000.
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Corning Cable Systems LLC: *See*—
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Corporate Computer Systems: *See*—
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Correa, Juan C. C.; Hernandez, Nestor; Bushnell, Peter R.; and Adomeit, Werner, to Carrier Corporation. Structure for facilitating assembly of an air conditioning unit having a removable chassis. 6,330,807, Cl. 62-262.000.
Cosman, Eric R.; and Wells, Trent H., Jr., to Sherwood Services AG. Target-centered stereotaxtic surgical arc system with reorientatable arc axis. 6,331,180, Cl. 606-130.000.
Cotterill, Ronald I; Dunning, Kenneth; Marshall, James B; and Davenport, Alan, to Federal-Mogul Friction Products Limited. Friction material testing apparatus. 6,330,820, Cl. 73-9.000.
Council of Scientific and Industrial Research: *See*—
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Puttan, Krishnamurthy; Gowda, Nadur Muddanna Nanje; Rao, Eranki Venkata Surya Prakasa; and Kumar, Sushil, 6,331,198, Cl. 71-28.000.
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Cowen, Neil M.: *See*—
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Craft, David L.: *See*—
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Cran, James A., to Dalton Holdings Limited. Flexible barge. 6,330,865, Cl. 114-74.00T.
Cranford, Hayden Clavie, Jr.; Efferson, Joseph Ronald, Jr.; Gary, Theodore Allen; Johnson, Steven Howard; Kreielsheimer, Gregg; and Scheuer, Mark Edmund, to International Business Machines Corporation. Adaptive interface apparatus and method for data terminal elements in a communication network transmitting and receiving ethernet over a shielded twisted pair cabling system. 6,332,166, Cl. 709-250.000.
Cranmer, Laura Lou: *See*—
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Crespo, Carlito: *See*—
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Criddle, Craig S.: *See*—
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Crinon, Regis J., to Sharp Laboratories of America, Inc. Video skimming system utilizing the vector rank filter. 6,331,859, Cl. 345-619.000.
Cromwell, Roger S.: *See*—
Chatterji, Jiten; Cromwell, Roger S.; Reddy, Baireddy R.; and King, Bobby J., 6,330,917, Cl. 166-295.000.
Cromwell, S. Daniel; and Nobi, Laszlo, to Hewlett-Packard Company. Method for making a modular integrated apparatus for heat dissipation. 6,330,745, Cl. 29-832.000.
Crooks, Stephen L.; Lindstrom, Kyle J.; Merrill, Bryon A.; and Rice, Michael J., to 3M Innovative Properties Company. Sulfonamide and sulfamide substituted imidazoquinolines. 6,331,539, Cl. 514-228.500.
Cross, Gary A. Control-rod actuated axle assembly. 6,331,091, Cl. 403-322.200.
CRT Common Rail Technologies AG: *See*—
Spinnler, Fritz; and Zanetti, Claudio, 6,330,876, Cl. 123-456.000.
CTS Corporation: *See*—
VandenBoom, Robert M., 6,331,849, Cl. 345-161.000.
Cubus Corporation: *See*—
Khan, Azhar H.; Stiefel, James G.; Collier, Zaitrarrio T.; and Lee, Benjamin J., 6,332,150, Cl. 707-526.000.
Culver, Patricia M., Executrix: *See*—
Culver, Philip H., deceased, 6,330,886, Cl. 135-15.100.
Culver, Philip H., deceased (by Patricia M. Culver, Executrix), to Aerovane Products, Inc. Wind-resistant umbrella. 6,330,886, Cl. 135-15.100.
Cummings, Robert W.; and Ta, Thien D., to Behr Climate Systems, Inc. Refrigerant loss detection. 6,330,802, Cl. 62-129.000.
Cummings, William G.: *See*—
Ross, Michael J.; Segars, James E.; Cummings, William G.; Barrios, Carlos M.; and Gampa, Ravishanke V., 6,332,098, Cl. 700-226.000.
Cummins Engine Company, Inc.: *See*—
Leonard, Jay F.; and Foy, John S., 6,330,872, Cl. 123-193.500.
Curry, Brett: *See*—
Duval, Michael S.; Curry, Brett; and Spencer, Norman, 6,330,761, Cl. 42-59.000.
Curry, James F.: *See*—
Wu, Chi-San; Senak, Laurence; Osborne, Donna; Curry, James F.; Schriver, Charles B.; and Silverstein, Irwin B., 6,331,333, Cl. 428-35.700.
Curtis, Bryce Allen; and Hsu, Jimmy Ming-Der, to International Business Machines Corporation. Cross-platform program, system, and method having a global registry object for mapping registry functions in a windows operating system environment. 6,332,219, Cl. 717-11.000.
Curtis, Thomas T.; Lamb, Gordon D.; and Abraham, William D., to Lubrizol Corporation, The. Synthetic diesel engine lubricants containing dispersant-viscosity modifier and functionalized phenol detergent. 6,331,510, Cl. 508-578.000.
Cuthbertson, Alan: *See*—
Klaveness, Jo; Rongved, Pål; Høgset, Anders; Tolleshaug, Helge; Cuthbertson, Alan; Hoff, Lars; Bryn, Klaus; Hellebust, Halldis; and Solbakken, Magne, 6,331,289, Cl. 424-9.520.
Cvetkovic, Zoran; and Daubechies, Ingrid, to AT&T Corp. A/D conversion through dithering. 6,331,831, Cl. 341-131.000.
Cypress Semiconductor Corporation: *See*—
Chang, Bo Soon; Verma, Vani; and Odejar, Anthony, 6,331,728, Cl. 257-676.000.
Cytokinetics, Inc.: *See*—
Beraud, Christophe; and Sakowicz, Roman, 6,331,424, Cl. 435-196.000.
Beraud, Christophe; and Freedman, Richard, 6,331,430, Cl. 435-252.300.
Daage, Michel A.: *See*—
Lapidus, Albert L'Vovoch; Krylova, Alla Jurievna; Daage, Michel A.; Koveal, Russell J.; and Fiato, Rocco A., 6,331,574, Cl. 518-709.000.
Dabak, Anand G.: *See*—
Hosur, Srinath; Schmidl, Timothy M.; and Dabak, Anand G., 6,331,975, Cl. 370-342.000.
Dabbs, James M.: *See*—
Brown, Algie C.; Welty, Carl T.; Williams, Henry G.; Williams, David M.; and Dabbs, James M., 6,331,893, Cl. 356-601.000.
Dagh, Ingemar; and Carlsson, Anders, to Volvo Lastvagnar AB. Wheel hub and brake disc arrangement for heavy vehicles. 6,330,937, Cl. 188-18.00A.
Dagle, John: *See*—
Weeks, Daniel L.; and Dagle, John, 6,331,617, Cl. 536-24.500.
Dahl, Jeffrey A., to Clark Equipment Company. Frame for a sliding window having a movable track section for removing the window. 6,330,765, Cl. 49-453.000.
Dai, Xia: *See*—
Fletcher, Thomas D.; and Dai, Xia, 6,331,793, Cl. 327-51.000.
Daiber, Andrew J.; and McDonald, Mark E., to Siros Technologies, Inc. Reflection optics reference beam telescope. 6,331,904, Cl. 359-32.000.
Daily, William D.; Laine, Daren L.; and Laine, Edwin F., to Leak Location Services, Inc. Methods for detecting and locating leaks in containment facilities using electrical potential data and electrical resistance tomographic imaging techniques. 6,331,778, Cl. 324-557.000.
DaimlerChrysler AG: *See*—
Polic, Marko; and Weikert, Günther, 6,330,930, Cl. 181-204.000.
Schenk, Bernhard, 6,331,029, Cl. 296-122.000.
Wilms, Bernd, 6,331,065, Cl. 362-493.000.
Windte, Volker; and Fischer, Roland, 6,331,772, Cl. 324-207.240.
Dalko, Maria: *See*—
Tuloup, Remy; Dalko, Maria; and Rubinstenn, Gilles, 6,331,535, Cl. 514-182.000.
Dallas Semiconductor Corporation: *See*—
Hass, Steven N.; Bolan, Michael L.; Fekete, Nicholas M. G.; and Lee, Robert D., 6,330,977, Cl. 235-487.000.
Dallemange, Bernard: *See*—
Thomas, Brian; Beaufils, Jean-Marc; Cogan, Adrian; Dallemange, Bernard; Gozlan, Gilles; Luan, Jiyuan; Thornton, Neill; and Toth, James, 6,331,763, Cl. 320-136.000.
Dalton Holdings Limited: *See*—
Cran, James A., 6,330,865, Cl. 114-74.00T.

Dalton, William M.: *See*—
Heimann, Robert L.; Heimann, Nancy M.; Dalton, William M.; Taylor, Donald W.; and Scrivens, Todd W., 6,331,509, Cl. 508-136.000.

Daly, Thomas J.; Clumpner, Michael; and O'Lenick, Anthony J., Jr., to Nova Molecular Technologies INC. Ether amines and derivatives. 6,331,648, Cl. 564-285.000.

D' Ambrogio, Robert; and Connors, Thomas, to Colgate Palmolive Company. Grease cutting light duty liquid detergent containing lauryol ethylene diamine triacetate. 6,331,516, Cl. 510-425.000.

Damerow, Robert W.: *See*—
Renkes, Kenneth R.; and Damerow, Robert W., 6,331,742, Cl. 310-68.00C.

Damodaran, Sundaravel: *See*—
Perez, Mario A.; Damodaran, Sundaravel; and Swan, Michael D., 6,331,343, Cl. 428-141.000.

Dan, Kenichi, to Brother Kogyo Kabushiki Kaisha. Communication apparatus selectively preventing production of a callers voice. 6,332,018, Cl. 379-68.000.

Daneman, Steven A.: *See*—
Hasegawa, Mark M.; Daneman, Steven A.; DeJesus, Ronaldo R.; and Babel, Henry W., 6,331,357, Cl. 428-446.000.

Danenberg, Kathleen D.: *See*—
Laird, Peter W.; Eads, Cindy A.; and Danenberg, Kathleen D., 6,331,393, Cl. 435-6.000.

Danielson, Arvin D.: *See*—
Bunte, Alan G.; Danielson, Arvin D.; Durbin, Dennis A.; and Bennett, James D., 6,330,975, Cl. 235-472.010.

Dark, Richard C. G. Tamper evident closure. 6,330,959, Cl. 222-153.100.

Darlington, William H.: *See*—
Romero, Arthur G.; and Darlington, William H., 6,331,636, Cl. 548-235.000.

Dart Engineering AG: *See*—
Ekman, Thure, 6,330,890, Cl. 137-269.000.

Darveaux, Robert F.: *See*—
Fusaro, James M.; Darveaux, Robert F.; and Rodriguez, Pablo, 6,331,451, Cl. 438-126.000.

Darwin Discovery, Ltd.: *See*—
Dyke, Hazel Joan; Lowe, Christopher; and Montana, John Gary, 6,331,556, Cl. 514-378.000.

Dasgupta, Purnendu K., to Global FIA, Inc. Luminescence detector with liquid-core waveguide. 6,332,049, Cl. 385-12.000.

Datta, Paul Joseph: *See*—
Hahn, John Timothy; Venturino, Michael Barth; Berken, Bradley John; St. Louis, Raymond Gerard; and Datta, Paul Joseph, 6,330,735, Cl. 19-296.000.

Daubechies, Ingrid: *See*—
Cvetkovic, Zoran; and Daubechies, Ingrid, 6,331,831, Cl. 341-131.000.

Davenport, Alan: *See*—
Cotterill, Ronald I; Dunning, Kenneth; Marshall, James B; and Davenport, Alan, 6,330,820, Cl. 73-9.000.

David, Gary S.: *See*—
Nova, Michael P.; Senyei, Andrew E.; and David, Gary S., 6,331,273, Cl. 422-68.100.

David S. Smith Packaging Limited: *See*—
Shipway, Malcolm, 6,330,780, Cl. 53-426.000.

Davies, Gary Raymond, to Lucas Industries, plc. Power supplies of ECUs. 6,331,767, Cl. 323-282.000.

Davies, Richard Huw; Savill, Derek Guy; and Jones, Paul, to Chesebrough-Pond's USA Co., division of Conopco, Inc. Toothbrush. 6,330,730, Cl. 15-167.100.

Davis, Bradley K.; Thelen, Robert M.; and Allyn, Michael C., to Agilent Technologies, Inc. Magneto-resistive head read amplifier. 6,331,921, Cl. 360-67.000.

Davis, Bruce: *See*—
Bennington, Gerard E.; Backer, George; Green, Shawn; Cooper, Bill; Spell, Dave; Rogers, Rosetta; and Davis, Bruce, 6,331,877, Cl. 348-731.000.

Davis, Mark E.: *See*—
Tsuji, Katsuyuki; Jones, Christopher W.; and Davis, Mark E., 6,331,500, Cl. 502-63.000.

Davis, Steven C.: *See*—
Sampayan, Stephen E.; Krogh, Michael L.; Davis, Steven C.; Decker, Derek E.; Rosenblum, Ben Z.; Sanders, David M.; and Elizondo-Decanini, Juan M., 6,331,194, Cl. 29-25.030.

Dawalibi, Nofal, to Electronic Key Systems (E.K.S.) S.A.R.L. Programmable electronic locking device. 6,331,812, Cl. 340-5.200.

Dean, Jeffrey A.; Hicks, James E., Jr.; Waldspurger, Carl A.; and Weihl, William E., to Compaq Computer Corporation. Method for estimating statistics of properties of memory system transactions. 6,332,178, Cl. 711-118.000.

Deaton, Joseph C.; Parton, Richard L.; Penner, Thomas L.; Harrison, William J.; and Fenton, David E., to Eastman Kodak Company. Photographic material having enhanced light absorption. 6,331,385, Cl. 430-572.000.

Debbins, Josef P.; Prorok, Richard J.; and Balloni, William J., to General Electric Company. MR imaging system with interactive MR geometry prescription control over a network. 6,331,776, Cl. 324-309.000.

Decker, Derek E.: *See*—
Sampayan, Stephen E.; Krogh, Michael L.; Davis, Steven C.; Decker, Derek E.; Rosenblum, Ben Z.; Sanders, David M.; and Elizondo-Decanini, Juan M., 6,331,194, Cl. 29-25.030.

Deckert, Curtis K.; Hildwein, Roger L.; and Wilcox, Robert L., to LifeSpex, Incorporated. Optical probe having and methods for uniform light irradiation and/or light collection over a volume. 6,332,092, Cl. 600-476.000.

Decor, Rachel; Mioskowski, Charles; Schmutz, Marc; and Wagner, Alain, to Aventis CropScience SA. Nitrogen-containing silicone useful for compacting nucleic acid sequences and use for transforming cells. 6,331,434, Cl. 435-458.000.

DeCristofaro, Nicholas John; and Stamatis, Peter Joseph, to Honeywell International Inc. Bulk amorphous metal magnetic components. 6,331,363, Cl. 428-692.000.

Deere & Company: *See*—
Bischoff, Lutz, 6,331,142, Cl. 460-112.000.

Dees, H. Craig; Scott, Timothy; Smolik, John T.; and Wachter, Eric A., to Photogen, Inc. Methods for high energy phototherapeutics. 6,331,286, Cl. 424-1.850.

Defosse, Gérard: *See*—
Philippo, Christophe; Mougenot, Patrick; Defosse, Gérard; Braun, Alain; and Bovy, Philippe, 6,331,549, Cl. 514-311.000.

De Francheschi, Lucia: *See*—
Brugnara, Carlo; Beuzard, Yves; Galacteros, Frederick; and De Francheschi, Lucia, 6,331,557, Cl. 514-423.000.

DeFrank, Michael P.; and Rosati, Robert J., to Alaris Medical Systems, Inc. Thermally isolated probe for biomedical apparatus and method of communicating energy there through. 6,332,090, Cl. 600-474.000.

de Garrido, Diego P.; Uz, Kamil Metin; Kohn, Leslie D.; and LeGall, Didier, to LSI Logic Corporation. Motion compensated de-interlacing. 6,331,874, Cl. 348-452.000.

Degussa Aktiengesellschaft: *See*—
Lunginsland, Hans-Detlef; and Batz-Sohn, Christoph, 6,331,605, Cl. 528-30.000.

DeHerrera, Mark: *See*—
Naji, Peter K.; DeHerrera, Mark; and Durlam, Mark, 6,331,943, Cl. 365-158.000.

DeJesus, Ronaldo R.: *See*—
Hasegawa, Mark M.; Daneman, Steven A.; DeJesus, Ronaldo R.; and Babel, Henry W., 6,331,357, Cl. 428-446.000.

Deka Products Limited Partnership: *See*—
Steenson, James Henry, Jr.; and Amsbury, Burl, 6,332,103, Cl. 701-1.000.

Dekalb Genetics Corporation: *See*—
Chomet, Paul S.; Frey, Monika; and Gierl, Alfons, 6,331,660, Cl. 800-278.000.
Lundquist, Ronald C.; and Walters, David A., 6,331,665, Cl. 800-302.000.

Del Industries, Inc.: *See*—
Martin, Frank G., 6,331,279, Cl. 422-186.070.

DeLaurier, Anthony P.: *See*—
Van Hook, Timothy J.; Cheng, Howard H.; DeLaurier, Anthony P.; Gossett, Carroll P.; Moore, Robert J.; Shepard, Stephen J.; Anderson, Harold S.; Princen, John; Doughty, Jeffrey C.; Pooley, Nathan F.; Sheppard, Byron; Takeda, Genyo; and Kato, Shuhei, 6,331,856, Cl. 345-503.000.

Dell USA, L.P.: *See*—
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Hom, Bo; O'Neal, Sean P.; and Wahl, Rick W., 6,331,936, Cl. 361-686.000.

Delphi Technologies, Inc.: *See*—
Doxey, Mark Harvey; and Weckesser, David Scott, 6,331,015, Cl. 280-743.100.
Scott, Stephen Daniel; and Morris, Daniel Gordon, 6,331,838, Cl. 343-715.000.

DeLucca, George V.: *See*—
Ko, Soo S.; DeLucca, George V.; Duncia, John V.; Santella, Joseph B., III; and Gardner, Daniel S., 6,331,541, Cl. 514-237.200.
Ko, Soo S.; DeLucca, George V.; Duncia, John V.; Santella, Joseph B., III; and Wacker, Dean A., 6,331,545, Cl. 514-253.010.

Del Vecchio, Michael Arthur; Loudon, Robert Eben; and Sutton, Paul Matthew, to Envirogen, Inc. System and method for withdrawing permeate through a filter and for cleaning the filter in situ. 6,331,251, Cl. 210-636.000.

Demers, Robert Richard: *See*—
Cherukuri, Satyam Choudary; Demers, Robert Richard; Fan, Zhong Hui Hugh; Levine, Aaron W.; McBride, Sterling Edward; and Zanzucchi, Peter John, 6,331,439, Cl. 436-174.000.

Demetrick, Douglas J.: *See*—
Beach, David H.; Demetrick, Douglas J.; Serrano, Manuel; and Hannon, Gregory J., 6,331,390, Cl. 435-6.000.

DeMichele, Christopher J. Multi-function golf bag. 6,330,944, Cl. 206-315.300.

Dennison, Charles H., to Micron Technology, Inc. Integrated circuitry. 6,331,725, Cl. 257-368.000.

Denso Corporation: *See*—
Inoue, Masaomi; Sato, Osamu; and Adachi, Michio, 6,330,870, Cl. 123-90.170.
Ito, Makoto, 6,330,739, Cl. 29-513.000.
Takahashi, Koji; Shirota, Yuichi; Ban, Koichi; Sugi, Hikaru; Niimi, Yasuhiko; Kishita, Hiroshi; Yamanaka, Yasushi; and Naka, Masayoshi, 6,330,909, Cl. 165-202.000.
Yamashita, Kouji; Yoshida, Satohisa; Umebayashi, Makoto; Kamei, Seiji; Hotta, Hiroyuki; and Uramune, Hidekazu, 6,330,979, Cl. 237-12.30R.

Dentech, L.L.C.: *See*—

Morris, Alan C.; Mabrito, Craig A.; and Roberts, Matthew R., 6,331,113, Cl. 433-215.000.

Deome, Mark E.: *See*—
Organ, Donald V.; Deome, Mark E.; Techasaratoole, Rajaneekara; and Greene, Val N., 6,332,212, Cl. 717-4.000.

Deposition Sciences, Inc.: *See*—
Wood, Byron A., II; and Howard, William H., 6,331,914, Cl. 359-584.000.

DePrisco, Joseph; Good, Brad; Hogeston, Kermit; and Lahey, Brent, to Automated Laser Corporation. Precision guiding apparatus for laser marking system. 6,331,691, Cl. 219-121.680.

Der, Sandy: *See*—
Silverman, Robert H.; Williams, Bryan R. G.; and Der, Sandy, 6,331,396, Cl. 435-6.000.

Derhacobian, Narbeh: *See*—
Wang, Janet S. Y.; Derhacobian, Narbeh; and Sunkavalli, Ravi S., 6,331,952, Cl. 365-185.290.
Wang, Janet S. Y.; Derhacobian, Narbeh; and Sobek, Daniel, 6,331,953, Cl. 365-185.290.

DeRisio, David T. Hanger storage system. 6,330,949, Cl. 211-85.700.

Derocher, Michael D.: *See*—
Helot, Jacques H.; and Derocher, Michael D., 6,331,934, Cl. 361-686.000.

Desai, Devendra Dahyabhai, to Reliance Industries, Inc. Process and apparatus for particle size reduction and homogeneous blending of ingredients in a fluidized change can mixer. 6,331,070, Cl. 366-197.000.

Desjarlais, Renee Louise: *See*—
Carr, Thomas Joseph; Desjarlais, Renee Louise; Gallagher, Timothy Francis; Halbert, Stacie Marie; Oh, Hye-Ja; Thompson, Scott Kevin; Veber, Daniel Frank; Yamashita, Dennis Shinji; and Yen, Jack Hwekwo, 6,331,542, Cl. 514-237.800.

Desmond, John P.; McCormack, Sean; Lawlor, Patrick J.; and Mousseau, Rick, to Donnelly Corporation. Lighted vehicular mirror assembly. 6,331,066, Cl. 362-494.000.

de Tejada, Inigo Saenz: *See*—
Garvey, David S.; de Tejada, Inigo Saenz; Earl, Richard A.; and Khanapure, Subhash P., 6,331,543, Cl. 514-250.000.

Detroit Diesel Corporation: *See*—
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Deutsch THOMSON-Brandt GmbH: *See*—
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Deutsche Telekom AG: *See*—
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deVries, Arjen P.; Sokolov, Michael; Kovalcin, David E.; and Eberman, Brian, to AltaVista Company. Technique for annotating media. 6,332,144, Cl. 707-102.000.

Dey, Debendranath: *See*—
Neogi, Partha; Nag, Bishwajit; Medicherla, Satyanarayana; and Dey, Debendranath, 6,331,633, Cl. 548-183.000.

DeYoung, Thomas W.: *See*—
Cohen, Beri; DeYoung, Thomas W.; Draganovic, Krunoslav Esteban; and Purpura, Paul E., 6,331,437, Cl. 436-43.000.

DiCaprio, Fernando: *See*—
Wang, Lixiao; Tran, The Thomas Trinh; DiCaprio, Fernando; and Williams, Brett A., 6,331,186, Cl. 623-1.110.

Dickens, Elmer D., Jr.: *See*—
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Dickman, Robert B.: *See*—
Liu, Hsin-Tuan; Dickman, Robert B.; Krabacher, Kenneth W.; Steinmetz, Gregory T.; Beacher, Brent F.; and Doloresco, Bryan K., 6,331,100, Cl. 416-238.000.

Diebold, Incorporated: *See*—
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Molano, Rafael; Gianfagna, Lawrence; Roth, Douglas E.; Kurtek, Ed; Goulet, Alan; Symonds, Robert D.; Gill, Robert Bradley; Biwer, William; Walsh, Mike; Welsh, Julie; Gebhard, Richard; and Spice-Kopischke, Joel, 6,330,978, Cl. 235-492.000.

Diedrich, Karin: *See*—
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DiFrancesco, Mark W.: *See*—
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Di Francesco, Valentina: *See*—
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Digimarc Corporation: *See*—
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Digital Air, Inc.: *See*—
Taylor, Dayton V., 6,331,871, Cl. 348-159.000.

Di Giura, Maddalena; Pagni, Andrea; Poluzzi, Rinaldo; and Rizzotto, Gianguido, to SGS-Thomson Microelectronics S.r.l. Fuzzy filtering method and associated fuzzy filter. 6,332,136, Cl. 706-1.000.

Digman, Michael J.; Walker, James D.; and Bennett, James, to New Holland North America, Inc. Front drum adjustment mechanism for a feederhouse on an agricultural combine. 6,330,782, Cl. 56-15.800.

Dillon, Douglas M.; and Cassagnol, Robert D., to Hughes Electronics Corporation. Method and apparatus for connecting computer to satellite antenna. 6,331,979, Cl. 370-392.000.

DiLullo, Gino A.: *See*—
Rickards, Allan R.; Brannon, Harold D.; Rae, Philip J.; DiLullo, Gino A.; and Stephenson, Christopher J., 6,330,916, Cl. 166-280.000.

Dimitrakopoulos, Christos Dimitrios: *See*—
Angelopoulos, Marie; Dimitrakopoulos, Christos Dimitrios; Furman, Bruce Kenneth; Graham, Teresita Ordonez; and Lien, Shui-Chih Alan, 6,331,356, Cl. 428-411.100.

Dirksen, Peter; and Juffermans, Casparus A. H., to U.S. Philips Corporation. Test object for use in detecting aberrations of an optical imaging system. 6,331,368, Cl. 430-5.000.

Discovery Partners International: *See*—
Nova, Michael P.; Senyei, Andrew E.; and David, Gary S., 6,331,273, Cl. 422-68.100.

Display Technologies, Inc.: *See*—
Feibelman, Jeffrey A., 6,330,758, Cl. 40-299.010.

DJ Orthopedics, LLC: *See*—
Bastyr, Charles A.; and Nebolon, Joseph F., 6,331,169, Cl. 602-16.000.

Do, Thanh Van, to Telefonaktiebolaget LM Ericsson (publ). Arrangement for improving availability of services in a communication system. 6,332,081, Cl. 455-461.000.

Doan, Trung T.; Blalock, Guy T.; Durcan, Mark; and Meikle, Scott G., to Micron Technology, Inc. Planarization process for semiconductor substrates. 6,331,488, Cl. 438-698.000.

Dobbs, Mary K.: *See*—
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Dockray, Thomas: *See*—
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Orr, Christopher Henry; Luff, Craig Janson; Dockray, Thomas; and Macarthur, Duncan Whittemore, 6,331,707, Cl. 250-387.000.

Dodd, James W., to AGR International, Inc. Self-cleaning spray chamber for livestock and poultry feed pellet processing system. 6,331,210, Cl. 118-303.000.

Doherty, Robert C.; and Stewart, Thomas K., to PJC Technologies, Inc. Customized electrical test probe head using uniform probe assemblies. 6,330,744, Cl. 29-825.000.

Doi, Manabu, to Casio Computer Co., Ltd. Receiver device and receiving channel setting method. 6,332,078, Cl. 455-434.000.

Dollinger, Markus: *See*—
Linker, Karl-Heinz; Findeisen, Kurt; Andree, Roland; Drewes, Mark-Wilhelm; Lender, Andreas; Schallner, Otto; Haas, Wilhelm; Santel, Hans-Joachim; and Dollinger, Markus, 6,331,507, Cl. 504-244.000.

Doloresco, Bryan K.: *See*—
Liu, Hsin-Tuan; Dickman, Robert B.; Krabacher, Kenneth W.; Steinmetz, Gregory T.; Beacher, Brent F.; and Doloresco, Bryan K., 6,331,100, Cl. 416-238.000.

Dolphin, David; Peng, Xuejun; and Sternberg, Ethan D., to University of British Columbia, The. Chiral separation of benzoporphyrin derivative mono-and di-acids by laser-induced fluorescence capillary electrophoresis. 6,331,235, Cl. 204-451.000.

Domagala, John Michael; Ellsworth, Edmund Lee; Huang, Liren; Renau, Thomas Eric; Singh, Rajeshwar; and Stier, Michael Andrew, to Warner-Lambert Company. 7-substituted quinazolin-2,4-diones useful as antibacterial agents. 6,331,538, Cl. 514-224.500.

Domoto, Gerald A., to Xerox Corporation. Passive management of transfuse belt temperature distribution. 6,332,067, Cl. 399-307.000.

Dong, Junxing; Tang, Zhongming; Mi, Zhibao; and Wang, Bingji, to PLA, Institute of Radiation Medicine Academy of Military Medical Sciences of the. Dicaffeoylquinic acid for treating hepatitis B and the diseases associated with retrovirus, and the new caffeoylquinic acid derivatives. 6,331,565, Cl. 514-532.000.

Dongil Technology Ltd.: *See*—
Hong, Soongil, 6,331,748, Cl. 310-318.000.

Donnelly Corporation: *See*—
Desmond, John P.; McCormack, Sean; Lawlor, Patrick J.; and Mousseau, Rick, 6,331,066, Cl. 362-494.000.

Doughty, Jeffrey C.: *See*—
Van Hook, Timothy J.; Cheng, Howard H.; DeLaurier, Anthony P.; Gossett, Carroll P.; Moore, Robert J.; Shepard, Stephen J.; Anderson, Harold S.; Princen, John; Doughty, Jeffrey C.; Pooley, Nathan F.; Sheppard, Byron; Takeda, Genyo; and Kato, Shuhei, 6,331,856, Cl. 345-503.000.

Douglas, William E. Barrier lifter. 6,331,025, Cl. 294-110.100.

Dousette, Patricia J.: *See*—
Barkataki, Shan; Dousette, Patricia J.; Frederick, Dale F.; Harte, Stuart H.; and Johnson, Gary R., 6,332,210, Cl. 717-1.000.

Doval, Jose J: *See*—
Boleda, Miquel; Doval, Jose J; Serra, Albert; and Gros, Xavier, 6,331,038, Cl. 347-9.000.

Dow AgroSciences LLC: *See*—
Rubin-Wilson, Beth; Guo, Lining; Skokut, Tom; Young, Scott; Folkerts, Otto; Armstrong, Katherine; and Cowen, Neil M., 6,331,664, Cl. 800-298.000.

Dow Chemical Company, The: *See*—
Drumright, Ray Eugene; Ho, Thoi Huu; and Terbrueggen, Robert Henry, 6,331,597, Cl. 525-333.500.

Dowdle, John R.: *See—*
Gustafson, Donald E.; Dowdle, John R.; and Elwell, John M., Jr., 6,331,835, Cl. 342-357.060.

Dower, William V.: *See—*
Cole, Brian M.; Dower, William V.; and Oxman, Joel D., 6,331,080, Cl. 385-80.000.

Doxey, Mark Harvey; and Weckesser, David Scott, to Delphi Technologies, Inc. Air bag fold and method. 6,331,015, Cl. 280-743.100.

Doyle, James Patrick: *See—*
Chaudhari, Praveen; Galligan, Eileen Ann; Doyle, James Patrick; Lacey, James Andrew; Lien, Shui-Chih Alan; Nakano, Hiroki; and Lu, Minhua, 6,331,381, Cl. 430-320.000.

Draganovic, Krunoslav Esteban: *See—*
Cohen, Beri; DeYoung, Thomas W.; Draganovic, Krunoslav Esteban; and Purpura, Paul E., 6,331,437, Cl. 436-43.000.

Dragovich, Peter S.; Prins, Thomas J.; and Zhou, Ru, to Agouron Pharmaceuticals, Inc. Antipicornaviral compounds, compositions containing them, and methods for their use. 6,331,554, Cl. 514-357.000.

Drake, Billy Wayne; and Hopkins, Doyle W., to Micro Electronics Group Inc. Microwave-based process for dental casting. 6,330,904, Cl. 164-35.000.

Drewes, Mark-Wilhelm: *See—*
Linker, Karl-Heinz; Findeisen, Kurt; Andree, Roland; Drewes, Mark-Wilhelm; Lender, Andreas; Schallner, Otto; Haas, Wilhelm; Santel, Hans-Joachim; and Dollinger, Markus, 6,331,507, Cl. 504-244.000.

Dreyer, Mark G.: *See—*
Warmus, James L.; Dreyer, Mark G.; and Shively, J. Thomas, 6,332,149, Cl. 707-517.000.

Driscoll, Edward, Jr.: *See—*
Furlan, John Louis Warpakowski; and Driscoll, Edward, Jr., 6,331,869, Cl. 348-36.000.

Drori, Joseph; and Lin, Allan Ming-Lun, to Xicor, Inc. High-resolution, high-precision solid-state potentiometer. 6,331,768, Cl. 323-369.000.

Drumright, Ray Eugene; Ho, Thoi Huu; and Terbrueggen, Robert Henry, to Dow Chemical Company, The. Azidosilane-modified, moisture-curable polyolefin polymers, process for making, and articles obtained therefrom. 6,331,597, Cl. 525-333.500.

Du Pont de Nemours, E. I., and Company: *See—*
Kurian, Joseph Varapadavil; and Chang, Jing Chung, 6,331,264, Cl. 264-172.170.
Ostermaier, John Joseph, 6,331,651, Cl. 564-490.000.
Sun, Yanhui, 6,331,606, Cl. 528-295.000.

Ducaroir, Francois; Nakamura, Karl S.; and Jenkins, Michael O., to LSI Logic Corporation. Serial data transceiver architecture and test method for measuring the amount of jitter within a serial data stream. 6,331,999, Cl. 375-226.000.

Dudda, Olaf: *See—*
Spannagel, Wilfried; Diedrich, Karin; Dudda, Olaf; and Baseler, Christian, 6,331,683, Cl. 177-245.000.

Dudman, Richard L.: *See—*
Rutherford, Robert B.; and Dudman, Richard L., 6,330,986, Cl. 244-134.00E.

Duesman, Kevin G.; and Farnworth, Warren M., to Micron Technology, Inc. Utilization of die repattern layers for die internal connections. 6,331,736, Cl. 257-778.000.

Duga, Brady: *See—*
Sachs, James; Pomeroy, Thomas W.; Novicov, Aleksey; Conboy, Garth; Walter, Erik; Leshner, William S.; Duga, Brady; and Wotiz, Richard, 6,331,865, Cl. 345-776.000.

Dukes, Michael A.: *See—*
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Dultz, Wolfgang; Beresnev, Leonid; Patrusheva, Galina; and Haase, Wolfgang, to Deutsche Telekom AG. Arrangement and method for electrically controlling the intensity of unpolarized light. 6,331,910, Cl. 359-246.000.

Dumoutier, Laure; Louhed, Jamila; and Renauld, Jean-Christophe, to Ludwig Institue for Cancer Research. Isolated nucleic acid molecules which encode T cell inducible factors (TIFS), the proteins encoded, and uses thereof. 6,331,613, Cl. 536-23.500.

Duncan, John: *See—*
Peirce, Roger L.; Rhoads, Bruce C.; Duncan, John; Loftesness, Scott J.; Johnson, Kurt W.; Dobbs, Mary K.; and Mayes, Dan, 6,332,126, Cl. 705-14.000.

Duncan, Steven P., to Tactical Solutions, Inc. Apparatus and method for securely mounting a firearm to a support structure. 6,330,815, Cl. 70-58.000.

Duncia, John V.: *See—*
Ko, Soo S.; DeLucca, George V.; Duncia, John V.; Santella, Joseph B., III; and Gardner, Daniel S., 6,331,541, Cl. 514-237.200.
Ko, Soo S.; DeLucca, George V.; Duncia, John V.; Santella, Joseph B., III; and Wacker, Dean A., 6,331,545, Cl. 514-253.010.

Dunfield, John C., to Microvision, Inc. Frequency tunable resonant scanner. 6,331,909, Cl. 359-199.000.

Dunk, Michael P.; McCormick, Garrett P.; and Baranowski, John F., to Cooper Industries Inc. Control method and device for a switchgear actuator. 6,331,687, Cl. 218-140.000.

Dunning, Kenneth: *See—*
Cotterill, Ronald I; Dunning, Kenneth; Marshall, James B; and Davenport, Alan, 6,330,820, Cl. 73-9.000.

Dupel, Pascal; and Veyret, Jean-Bernard, to European Atomic Energy Community (EUROTOM). Refractory composite materials protected against oxidising at high temperature, precursors of the said materials, their preparation. 6,331,362, Cl. 428-689.000.

Dupire, Marc; and Michel, Jacques, to Atofina Research. Reinforced polymers. 6,331,265, Cl. 264-289.300.

DuPont Canada Inc.: *See—*
Mitchell, David John; and Kelly, Peter Yates, 6,331,595, Cl. 525-263.000.

Durbin, Dennis A.: *See—*
Bunte, Alan G.; Danielson, Arvin D.; Durbin, Dennis A.; and Bennett, James D., 6,330,975, Cl. 235-472.010.

Durbut, Patrick, to Colgate Palmolive Co. Cleaning composition containing a hydrophilizing polymer. 6,331,517, Cl. 510-426.000.

Durcan, Mark: *See—*
Doan, Trung T.; Blalock, Guy T.; Durcan, Mark; and Meikle, Scott G., 6,331,488, Cl. 438-698.000.

Durlam, Mark: *See—*
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Duval, Francois: *See—*
Shaanan, Gad; Duval, Francois; and Brousseau, Ivan, 6,332,084, Cl. 455-556.000.

Duval, Michael S.; Curry, Brett; and Spencer, Norman, to Smith & Wesson Corp. Blast shield apparatus and method of assembly for a revolver. 6,330,761, Cl. 42-59.000.

Dvorkis, Paul: *See—*
Bridgelall, Raj; Shepard, Howard; Barkan, Edward; Sanders, Robert; Maiman, Mitch; Dvorkis, Paul; Boriotti, Joseph; Krichever, Mark; Gurevich, Vladimir; and Breytman, Alexander, 6,330,973, Cl. 235-462.450.

Dwiggins, John H.: *See—*
Heath, Michael S.; Oriaran, T. Philips; Siegel, Mark S.; Harper, Frank D.; and Dwiggins, John H., 6,331,228, Cl. 162-117.000.

Dybas, Michael J.; Criddle, Craig S.; and Witt, Michael E., to Board of Trustees operating Michigan State University. Compositions for providing a chemical to a microorganism. 6,331,300, Cl. 424-93.400.

Dyhr, Einar: *See—*
Adler-Nissen, Jens; Jensen, Jens-Peter; and Dyhr, Einar, 6,331,323, Cl. 426-523.000.

Dyke, Hazel Joan; Lowe, Christopher; and Montana, John Gary, to Darwin Discovery, Ltd. Heterocyclic compounds and their therapeutic use. 6,331,556, Cl. 514-378.000.

Dykhuizen, Cornelius H.: *See—*
Mangeiga, John A.; Wilusz, Christopher J.; and Dykhuizen, Cornelius H., 6,330,995, Cl. 248-554.000.

Dykhuizen, Cornelius Harm: *See—*
Manteiga, John Alan; Dykhuizen, Cornelius Harm; Joseph, Thomas Peter; Wilusz, Christopher James; Troup, Robert Eugene; Boger, Ethan; and Franceschelli, Anthony John, 6,330,985, Cl. 244-54.000.

Dykstra, James R.: *See—*
MacDonald, Douglas B.; King, Jonathan J.; Sanders, Steven E.; Rheault, Alan E.; Dykstra, James R.; Waalkes, Michael L.; Walz, David A.; Williams, Patricia A.; Gravel, Donald P.; and Chang, Joseph, 6,330,773, Cl. 52-239.000.

Dykstra, Jerald P.; Mount, David J., Sr.; Skinner, Wesley J.; and Kirkpatrick, Allen R., to Epion Corporation. Enhanced etching/smoothing of dielectric surfaces. 6,331,227, Cl. 156-345.100.

Dymetman, Marc; and Copperman, Max, to Xerox Corporation. Marking medium area with encoded identifier for producing action through network. 6,330,976, Cl. 235-487.000.

Dyrlund, Christopher David: *See—*
Barker, Brandy Cyan; Kubinski, Donald Chester; Moffatt, Rodney Taylor; and Dyrlund, Christopher David, 6,330,984, Cl. 242-536.000.

E.I. du Pont de Nemours and Company: *See—*
Koch, Theodore Augur; Allgeier, Alan Martin; Harper, Mark Jay; and Sengupta, Sourav Kumar, 6,331,624, Cl. 540-538.000.
Wong, Chun Sing, 6,331,592, Cl. 525-71.000.

Eads, Cindy A.: *See—*
Laird, Peter W.; Eads, Cindy A.; and Danenberg, Kathleen D., 6,331,393, Cl. 435-6.000.

Earl, Richard A.: *See—*
Garvey, David S.; de Tejada, Inigo Saenz; Earl, Richard A.; and Khanapure, Subhash P., 6,331,543, Cl. 514-250.000.

Earley, William L. Device for marking swimming pool lane dividers. 6,331,129, Cl. 441-133.000.

eASIC Corporation: *See—*
Or-Bach, Zvi; and Cox, Bill Douglas, 6,331,733, Cl. 257-758.000.
Or-Bach, Zvi, 6,331,789, Cl. 326-39.000.
Or-Bach, Zvi; Wurman, Ze'ev; Zeman, Richard; and Cooke, Laurance, 6,331,790, Cl. 326-41.000.

Easler, Vincent Michael, Sr. Reusable ice substitute in a car. 6,330,955, Cl. 220-507.000.

Eastman, Jeffrey: *See—*
Beskitt, William Daniel; Harty, Michael J.; Eastman, Jeffrey; and Phelps, Richard J., 6,331,000, Cl. 271-3.010.

Eastman Kodak Company: *See—*
Deaton, Joseph C.; Parton, Richard L.; Penner, Thomas L.; Harrison, William J.; and Fenton, David E., 6,331,385, Cl. 430-572.000.

Eastman, Simon J.: *See—*
Scheule, Ronald K.; Bagley, Rebecca G.; Eastman, Simon J.; Cheng, Seng H.; Marshall, John; Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Chang, Chau-Dung; Hubbard, S. Catherine; Johnson, Duane E.; Maneval, Daniel C.; Shepard, H. Michael; and Gregory, Richard J., 6,331,524, Cl. 514-44.000.

Eberhard, Martin F.; and Tarpenning, Marc E., to Nuvomedia, Inc. Electronic book with automated look-up of terms of within reference titles. 6,331,867, Cl. 345-864.000.

Eberman, Brian: *See—*
deVries, Arjen P.; Sokolov, Michael; Kovalcin, David E.; and Eberman, Brian, 6,332,144, Cl. 707-102.000.

Ebihara, Takashi; Kikuyama, Susumu; Miyahara, Akiko; Wang, Xianglong; and Yuasa, Kohji, to Matsushita Electric Industrial Co., Ltd. Alkaline storage battery hydrogen-absorbing alloy electrode and method for producing the same. 6,331,367, Cl. 429-218.200.

Eccles, Steven Robert; and Schindler, Wayne Godoy, to AlliedSignal Inc. Flexible hoses communicating with a deployable hydraulic power assembly. 6,331,099, Cl. 416-142.000.

Ecosmart Technologies, Incorporated: *See—*
Bessette, Steven M.; and Beigler, Myron A., 6,331,572, Cl. 514-731.000.

Edagawa, Noboru: *See—*
Miyazaki, Tetsuya; Edagawa, Noboru; and Yamamoto, Shu, 6,331,907, Cl. 359-127.000.

Edwards, Glenn: *See—*
Carroll, Frank E.; Traeger, Robert H.; Mendenhall, Marcus H.; Waters, James W.; Edwards, Glenn; and Brau, Charles A., 6,332,017, Cl. 378-119.000.

Efferson, Joseph Ronald, Jr.: *See—*
Cranford, Hayden Clavie, Jr.; Efferson, Joseph Ronald, Jr.; Gary, Theodore Allen; Johnson, Steven Howard; Kreielsheimer, Gregg; and Scheuer, Mark Edmund, 6,332,166, Cl. 709-250.000.

Egebjerg Maskinfabrik A/S: *See—*
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Egholm, Michael: *See—*
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Eguchi, Satoshi: *See—*
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Ehle, Beate: *See—*
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Eirich, L. Dudley: *See—*
Wilson, C. Ron; Craft, David L.; Eirich, L. Dudley; Eshoo, Mark; Madduri, Krishna M.; Cornett, Cathy A.; Brenner, Alfred A.; Tang, Maria; Loper, John C.; and Gleeson, Martin, 6,331,420, Cl. 435-145.000.

Eisen, Yosef; and Shor, Asher, to State of Israel, Atomic Energy Commission. Room temperature solid state gamma or X-ray detectors. 6,331,705, Cl. 250-370.010.

Eisenberg, Peter M., to 3M Innovative Properties Company. Display control for software notes. 6,331,866, Cl. 345-784.000.

Eisenmann, Al A., II; and Yatron, Peter J. Bicycle training wheel assembly. 6,331,012, Cl. 280-293.000.

Eissfeller, Roman, to Roman Eissfeller GmbH. Automatic welding machine. 6,330,966, Cl. 228-8.000.

Ekchian, Jack A.: *See—*
Caren, Robert P.; Ekchian, Leon; and Ekchian, Jack A., 6,330,794, Cl. 60-274.000.

Ekchian, Leon: *See—*
Caren, Robert P.; Ekchian, Leon; and Ekchian, Jack A., 6,330,794, Cl. 60-274.000.

Ekman, Thure, to Dart Engineering AG. Device which comprises a rapid-coupling part connectable to a system of pressurizable fluid and such a rapid-coupling part. 6,330,890, Cl. 137-269.000.

El-Amawy, Ahmed A.: *See—*
Feldman, Martin; El-Amawy, Ahmed A.; and Vaidyanathan, Ramachandran, 6,332,050, Cl. 385-24.000.

Electronic Key Systems (E.K.S.) S.A.R.L.: *See—*
Dawalibi, Nofal, 6,331,812, Cl. 340-5.200.

Electronics for Imaging, Inc.: *See—*
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Elf Atochem S.A.: *See—*
Germain, Yves; Beal, Jean-Luc; and Le Roy, Christophe, 6,331,359, Cl. 428-476.300.

El-Ibiary, Yehia, to Reliance Electric Technologies, LLC. Monitoring system for bearings. 6,331,823, Cl. 340-870.160.

Elio Engineering: *See—*
Elio, Paul A., 6,330,994, Cl. 248-429.000.

Elio, Paul A., to Elio Engineering. Adjustable support apparatus and architecture for adjusting support apparatus. 6,330,994, Cl. 248-429.000.

Elisha Technologies Co LLC: *See—*
Heimann, Robert L.; Heimann, Nancy M.; Dalton, William M.; Taylor, Donald W.; and Scrivens, Todd W., 6,331,509, Cl. 508-136.000.

Elizondo-Decanini, Juan M.: *See—*
Sampayan, Stephen E.; Krogh, Michael L.; Davis, Steven C.; Decker, Derek E.; Rosenblum, Ben Z.; Sanders, David M.; and Elizondo-Decanini, Juan M., 6,331,194, Cl. 29-25.030.

Ellam, Albert F. Adjustable squaring tool. 6,330,752, Cl. 33-471.000.

Ellinas, Georgios; and Stern, Thomas E., to Trustees of Columbia University in the City of New York, The. Network switch failure restoration. 6,331,905, Cl. 359-110.000.

Ellsworth, Edmund Lee: *See—*
Domagala, John Michael; Ellsworth, Edmund Lee; Huang, Liren; Renau, Thomas Eric; Singh, Rajeshwar; and Stier, Michael Andrew, 6,331,538, Cl. 514-224.500.

El Sayyid, Waleed Mutasem; and Casterline, Cameron Scott, to Baxter International Inc. Methods for priming a blood compartment of a hemodialyzer. 6,331,252, Cl. 210-646.000.

Elward Systems Corporation: *See—*
Mitchell, Everett Lee; and Mitchell, Jed D., 6,330,772, Cl. 52-235.000.

Elwell, John M., Jr.: *See—*
Gustafson, Donald E.; Dowdle, John R.; and Elwell, John M., Jr., 6,331,835, Cl. 342-357.060.

Elwood, Matthew Paul; and Hinds, Christopher Neal, to ARM Limited. Vector register addressing. 6,332,186, Cl. 711-217.000.

Emerald BioAgriculture Corporation: *See—*
Kinnersley, Alan M., 6,331,505, Cl. 504-147.000.

Emery, Vincent C; and Griffiths, Paul, to Royal Free Hospital School of Medicine. Detection and quantification of human herpes virus 7 by enzymic amplification. 6,331,417, Cl. 435-91.320.

Emis, Dale: *See—*
Beckham, Scott; Emis, Dale; and Patel, Nilesh, 6,331,246, Cl. 210-136.000.

Emisphere Technologies Inc.: *See—*
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Empac Verpackungs GmbH: *See—*
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Enders, Martin, to Patent-Treuhand-Gesellschaft fuer elektrische Gluehlampen mbH. Motor vehicle lamp. 6,331,067, Cl. 362-503.000.

Endo, Masayuki, to Matsushita Electric Industrial Co., Ltd. Pattern forming method. 6,331,378, Cl. 430-314.000.

Endologix, Inc.: *See—*
Shokoohi, Mehrdad M.; Henson, Michael R.; and von Hoffmann, Gerard, 6,331,190, Cl. 623-1.220.

Endozyme Limited: *See—*
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Engel, Bradley N., to Storage Technology Corporation. Pinned synthetic anti-ferromagnet with oxidation protection layer. 6,331,773, Cl. 324-252.000.

Ennis, Michael G.: *See—*
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Ens, Werner: *See—*
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Enterasys Networks, Inc.: *See—*
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EnviroDerm Pharmaceuticals, Inc.: *See—*
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Envirogen, Inc.: *See—*
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Epion Corporation: *See—*
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Epler, Frederick A.: *See—*
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Epstein, Gordon Howard; Plyley, Alan; and Redmond, Russell James, to Baxter International Inc. Applicator for dispensing measured quantities with use of controlled suction. 6,331,172, Cl. 604-82.000.

Equipe Communications Corporation: *See—*
Simons, Corey; Pearson, Terrence S.; Noel, Chris R.; Kidder, Joseph D.; Branscomb, Brian; Langrind, Nicholas A.; Sullivan, Daniel J.; and Fox, Barbara A., 6,332,198, Cl. 714-6.000.

Equistar Chemicals, LP: *See—*
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Erickson, Lars Patrick; and Hempel, Tarry A., to First Data Corporation. AFP to postscript conversion. 6,331,895, Cl. 358-1.130.

Ericsson Inc.: *See—*
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Rydbeck, Nils; Molnar, Barbara; Guey, Jiann-Ching; Khayrallah, Ali; and Koilpillai, R. David, 6,332,006, Cl. 375-262.000.
Shah, Ali R.; and H'mimy, Hossam, 6,332,076, Cl. 455-423.000.

Erie, Dorothy A.; Ratcliff, Glenn; and Superfine, Richard, to University of North Carolina at Chapel Hill, The. Photothermal modulation for oscillating mode atomic force microscopy in solution. 6,330,824, Cl. 73-105.000.

Eriksson, Ulf; Olofsson, Birgitta; Alitalo, Kari; and Pajusola, Katri, to Ludwig Institute for Cancer Research; and Helsinki University Licensing Ltd. Oy. Antibodies specific for vascular endothelial growth factor-B. 6,331,301, Cl. 424-145.100.

Eroz, Mustafa; and Hammons, A. Roger, Jr., to Hughes Electronics Corporation. Method for a general turbo code trellis termination. 6,332,209, Cl. 714-790.000.

Esaki, Toru; Makino, Toshihiko; Nishimura, Yoshikazu; and Nagafuji, Toshiaki, to Chugai Seiyaku Kabushiki Kaisha. Aromatic amine derivatives having NOS inhibiting action. 6,331,553, Cl. 514-352.000.

Esch, Hans van; and Greaves, Wayne, to Hickham Industries, Inc. Methods for manufacture and repair and resulting components with directionally solidified or single crystal materials. 6,331,361, Cl. 428-548.000.

Eshoo, Mark: *See*—
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Eskildsen, Lars Erik: *See*—
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Etablissement Public Assistance Publique Hopitaux de Paris: *See*—
Brugnara, Carlo; Beuzard, Yves; Galacteros, Frederick; and De Francheschi, Lucia, 6,331,557, Cl. 514-423.000.

Estakhrf, Petro: *See*—
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Etam, Eran: *See*—
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Etec Systems, Inc.: *See*—
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Etex Corporation: *See*—
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Etheredge, Jay Dwain: *See*—
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Ethicon Endo-Surgery, Inc.: *See*—
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Etymotic Research, Inc.: *See*—
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Eull, Martin L.: *See*—
Jackson, Susan A.; and Eull, Martin L., 6,330,731, Cl. 15-230.110.
Jackson, Susan A.; and Eull, Martin L., 6,331,327, Cl. 427-260.000.

European Atomic Energy Community (EUROTOM): *See*—
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Evans, John A.: *See*—
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Evers, Ronald R.: *See*—
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Ex-Cello Machine Tools, Inc.: *See*—
Graham, John; Raible, Robert B.; and Klimach, Johann S., 6,331,093, Cl. 408-1.00R.

Expertcity.com, Inc.: *See*—
Schauser, Klaus E., 6,331,855, Cl. 345-502.000.

Exxon Research and Engineering Company: *See*—
Mauldin, Charles H., 6,331,575, Cl. 518-715.000.

ExxonMobil Oil Corporation: *See*—
Lu, Pang-Chia; and Cleckner, Michael Dale, 6,331,346, Cl. 428-195.000.

ExxonMobil Research and Engineering Company: *See*—
Lapidus, Albert L'Vovoch; Krylova, Alla Jurievna; Daage, Michel A.; Koveal, Russell J.; and Fiato, Rocco A., 6,331,574, Cl. 518-709.000.

Ezoe, Toshihide; and Yamada, Kohzaburoh, to Fuji Photo Film Co., Ltd. Photothermographic element. 6,331,386, Cl. 430-619.000.

Fabrice, Goly: *See*—
Hêrvé, Perrault; and Fabrice, Goly, 6,330,938, Cl. 188-158.000.

Fadeev, Alexander Y.: *See*—
McCarthy, Thomas J.; and Fadeev, Alexander Y., 6,331,329, Cl. 427-387.000.

Fahrig, Thomas; Gerlach, Irene; Horváth, Ervin; and Jork, Reinhard, to Bayer Aktiengesellschaft. Use of substituted amino-methyl-chromans for the prevention of neuronal degeneration and for the promotion of neuronal regeneration. 6,331,561, Cl. 514-456.000.

Fan, Zhong Hui Hugh: *See*—
Cherukuri, Satyam Choudary; Demers, Robert Richard; Fan, Zhong Hui Hugh; Levine, Aaron W.; McBride, Sterling Edward; and Zanzucchi, Peter John, 6,331,439, Cl. 436-174.000.

Fang, Cheng-Chi; Chang, Chao-I; and Ling, Ka Kit, to Integrated Memory Logic, Inc.; and Ling, Ka Kit. Autohost controller. 6,332,176, Cl. 711-113.000.

Fang, Qun K.: *See*—
Jerussi, Thomas P.; Senanayake, Chrisantha H.; and Fang, Qun K., 6,331,571, Cl. 514-646.000.

Fang, Tsung-Hsing: *See*—
Yo, Yu-Shi; Fang, Tsung-Hsing; and Ou, Teh-Chuan, 6,330,996, Cl. 248-694.000.

Farley, Marvin: *See*—
Smick, Theodore H.; Farley, Marvin; Ryding, Geoffrey; Satoh, Shu; and Rose, Peter, 6,331,713, Cl. 250-497.100.

Farnworth, Warren M.: *See*—
Duesman, Kevin G.; and Farnworth, Warren M., 6,331,736, Cl. 257-778.000.

Farooqui, Firdous: *See*—
Reedy, M. Parameswara; Farooqui, Firdous; and Michael, Maged A., 6,331,632, Cl. 548-148.000.

Fast Location.Net, LLC: *See*—
Jandrell, Louis H. M., 6,331,836, Cl. 342-357.120.

Faughey, Michael; and Lonczak, John, to McNeil-PPC, Inc. Squeeze dispenser. 6,330,960, Cl. 222-205.000.

Faust, Michael B.; Rahman, Faress H.; and Adam, Philippe H., to AlliedSignal Inc. Coanda water extractor. 6,331,195, Cl. 55-396.000.

Federal-Mogul Friction Products Limited: *See*—
Cotterill, Ronald I; Dunning, Kenneth; Marshall, James B; and Davenport, Alan, 6,330,820, Cl. 73-9.000.

Fedex Corporation: *See*—
Ross, Michael J.; Segars, James E.; Cummings, William G.; Barrios, Carlos M.; and Gampa, Ravishanke V., 6,332,098, Cl. 700-226.000.

Fedouloff, Michael; Guest, David William; and Smith, Gillian Elizabeth, to SmithKline Corporation p.l.c. Preparation of 1-butyl-4-piperidinylmethylamine. 6,331,631, Cl. 546-201.000.

Feibelman, Jeffrey A., to Display Technologies, Inc. Electronic article surveillance tag for eyeglasses and a method for attaching the electronic article surveillance tag to a pair of eyeglasses. 6,330,758, Cl. 40-299.010.

Feindel, Robert E.: *See*—
Gierc, Daniel B.; Pietraszewski, John A.; and Feindel, Robert E., 6,330,929, Cl. 180-428.000.

Fekete, Nicholas M. G.: *See*—
Hass, Steven N.; Bolan, Michael L.; Fekete, Nicholas M. G.; and Lee, Robert D., 6,330,977, Cl. 235-487.000.

Feldman, Martin; El-Amawy, Ahmed A.; and Vaidyanathan, Ramachandran, to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College. Optical slab waveguide for massive, high-speed interconnects. 6,332,050, Cl. 385-24.000.

Feldmann, Stefan; and Wahl, Oliver, to SKS metaplast Scheffer-Klute GmbH. Wheel guard for two-wheeled vehicles. 6,331,011, Cl. 280-152.100.

Fenster, Maier: *See*—
Acker, David E.; Govari, Assaf; Fenster, Maier; and Shapiro, Avishai, 6,332,089, Cl. 600-424.000.

Fenton, David E.: *See*—
Deaton, Joseph C.; Parton, Richard L.; Penner, Thomas L.; Harrison, William J.; and Fenton, David E., 6,331,385, Cl. 430-572.000.

Feodor Burgmann Dichtungswerke GmbH & Co.: *See*—
Friess, Werner; Jahnel, Harald; Vogt, Christian; and Morgner, Dietmar, 6,331,019, Cl. 285-49.000.

Ferguson, Ian: *See*—
Carr, Kathryn; Holbrook, Mark; and Ferguson, Ian, 6,331,204, Cl. 106-31.270.

Ferguson, Mark William James; and Shah, Mamta, to Renovo Limited. Wound healing and treatment of fibrotic disorders. 6,331,298, Cl. 424-85.100.

Ferrari, Paolo; Vigna, Benedetto; Montanini, Pietro; Castoldi, Laura; and Ferrera, Marco, to STMicroelectronics S.r.l. Method for manufacturing integrated devices including electromechanical microstructures, without residual stress. 6,331,444, Cl. 438-52.000.

Ferrera, Marco: *See*—
Ferrari, Paolo; Vigna, Benedetto; Montanini, Pietro; Castoldi, Laura; and Ferrera, Marco, 6,331,444, Cl. 438-52.000.

Feuerstein, Addy: *See*—
Gever, Eval; Hermoni, Nir; Bergman, Orit; Tayar, Gil; Reshef, Eilon; Gill, Doron; Feuerstein, Addy; Caneti, Yaron; Oppenheim, Roy; Etam, Eran; Shpeizer, Zohar; Borer, Yoav; Livine, Eyal; Kikin, Ruth; Zuckerman, Oren; and Kaas, Ron, 6,331,861, Cl. 345-629.000.

Fiato, Rocco A.: *See*—
Lapidus, Albert L'Vovoch; Krylova, Alla Jurievna; Daage, Michel A.; Koveal, Russell J.; and Fiato, Rocco A., 6,331,574, Cl. 518-709.000.

Fiedrich, Joachim. Dry installation of a radiant floor or wall hydronic heating system, metal radiating plates that attach to the edges of side-by-side boards and provide metal slots for holding hot water tubing. 6,330,980, Cl. 237-69.000.

Filtrona Richmond, Inc.: *See*—
Berger, Richard M., 6,330,883, Cl. 128-201.130.

Finch, John: *See*—
Walters, Stephen Arthur; and Finch, John, 6,331,017, Cl. 283-62.000.

Fincke, James R., to Bechtel BWXT Idaho, LLC. Method and system for measuring multiphase flow using multiple pressure differentials. 6,332,111, Cl. 702-50.000.

Findeisen, Kurt: *See*—
Linker, Karl-Heinz; Findeisen, Kurt; Andree, Roland; Drewes, Mark-Wilhelm; Lender, Andreas; Schallner, Otto; Haas, Wilhelm; Santel, Hans-Joachim; and Dollinger, Markus, 6,331,507, Cl. 504-244.000.

Finster, Wayne D.: *See*—
Roth, Joseph D.; and Finster, Wayne D., 6,331,018, Cl. 283-81.000.

Firestone, Paul A. Traffic control signal with displayed time-elapse. 6,331,824, Cl. 340-929.000.

First Data Corporation: *See*—
Erickson, Lars Patrick; and Hempel, Tarry A., 6,331,895, Cl. 358-1.130.
Peirce, Roger L.; Rhoads, Bruce C.; Duncan, John; Loftesness, Scott J.; Johnson, Kurt W.; Dobbs, Mary K.; and Mayes, Dan, 6,332,126, Cl. 705-14.000.

First Quality Nonwovens, Inc.: *See*—
Kauschke, Michael; and Turi, Mordechai, 6,331,268, Cl. 264-518.000.
Kauschke, Michael; and Turi, Mordechai, 6,331,345, Cl. 428-156.000.

Fischer, Gerhard: *See*—
Cianciara, Wojciech; Fischer, Gerhard; and Haug, Thomas, 6,330,874, Cl. 123-406.200.

Fischer, Roland: *See*—
Windte, Volker; and Fischer, Roland, 6,331,772, Cl. 324-207.240.

Fischetti, Vincent A.: *See*—
Rambukkana, Anura; Fischetti, Vincent A.; and Campbell, Kevin P., 6,331,405, Cl. 435-7.200.

Fisher, Kim J., to British Telecommunications public limited company. Display terminal user interface with ability to select remotely stored surface finish for mapping onto displayed 3-D surface. 6,331,858, Cl. 345-582.000.

Fissekis, John D.: *See*—
Conti, Peter S.; Alauddin, Mian M.; and Fissekis, John D., 6,331,287, Cl. 424-1.890.

Fitzgerald, Robert M.; Gresens, Eugene O.; and Broom, Ward P., to Innovative Product Achievements, Inc. Garment dispensing and receiving apparatus. 6,330,856, Cl. 100-52.000.

Fletcher, Jason: *See*—
Zoeller, Kenneth E.; Byers, Matthew E.; West, William V.; and Fletcher, Jason, 6,331,247, Cl. 210-299.000.

Fletcher, Thomas D.; and Dai, Xia, to Intel Corporation. Apparatus, method and system for pulse passgate topologies. 6,331,793, Cl. 327-51.000.

Flextronics Design Finland Oy: *See*—
Kuusama, Juha; Juhola, Minna; and Laaksonen, Juha, 6,332,026, Cl. 381-17.000.

Flondro, Daniel S.: *See*—
Johnson, Christopher L.; Flondro, Daniel S.; and Schmeltz, Timothy J., 6,332,072, Cl. 455-277.100.

Flow Holdings GmbH, (SAGL) LLC: *See*—
Bergman, Carl, 6,331,271, Cl. 419-49.000.

Fluder, Eugene M., Jr.: *See*—
Hull, Richard D.; Fluder, Eugene M., Jr.; and Singh, Suresh B., 6,332,138, Cl. 707-5.000.

Flux, Peter Robert, to Latchways PLC. Height safety system. 6,330,861, Cl. 104-115.000.

FMC Corporation: *See*—
Hone, George Dean; West, Glen Orval; and Beazer, Eric Peter, 6,330,726, Cl. 14-71.500.

Fodor, Jeffrey S.: *See*—
Vidaurri, Fernando C.; Geibel, Jon F.; Waterman, James W.; Chaffin, Jay M.; South, Aubrey, Jr.; Fodor, Jeffrey S.; and Kile, Glenn F., 6,331,608, Cl. 528-388.000.

Folkerts, Otto: *See*—
Rubin-Wilson, Beth; Guo, Lining; Skokut, Tom; Young, Scott; Folkerts, Otto; Armstrong, Katherine; and Cowen, Neil M., 6,331,664, Cl. 800-298.000.

Folks, Liesl: *See*—
Baglin, John Edward Eric; Kellock, Andrew John; Terris, Bruce David; Weller, Dieter Klaus; and Folks, Liesl, 6,331,364, Cl. 428-694.00T.

Foote, Michael R.; and Brumbaugh, Ernie, to Amway Corporation. Phosphate-free automatic dishwashing detergent. 6,331,512, Cl. 510-226.000.

Footmark, Inc.: *See*—
Brown, Algie C.; Welty, Carl T.; Williams, Henry G.; Williams, David M.; and Dabbs, James M., 6,331,893, Cl. 356-601.000.

Forbes, Leonard; and Geusic, Joseph E., to Micron Technology, Inc. Alternate method and structure for improved floating gate tunneling devices using textured surface. 6,331,465, Cl. 438-260.000.

Forcucci, Stephen J.: *See*—
Gambale, Richard A.; Forcucci, Stephen J.; Weiser, Michael F.; Choh, Richard T.; and Forde, Sean, 6,331,185, Cl. 623-1.100.

Ford Global Tech., Inc: *See*—
Wiedmayer, Jason, 6,331,027, Cl. 296-37.800.

Ford Global Technolobies, Inc.: *See*—
Wilson, Johanne; Cranmer, Laura Lou; Pickard, James; and Baxter, Kevin, 6,331,021, Cl. 285-239.000.

Ford Global Technologies, Inc.: *See*—
Adsit, Daniel Mark; and Yaroch, Michael D., 6,331,026, Cl. 296-37.700.
Brown, Todd Allen; and Rhode, Douglas Scott, 6,332,104, Cl. 701-1.000.

Forde, Sean: *See*—
Gambale, Richard A.; Forcucci, Stephen J.; Weiser, Michael F.; Choh, Richard T.; and Forde, Sean, 6,331,185, Cl. 623-1.100.

Fort James Corporation: *See*—
Heath, Michael S.; Oriaran, T. Philips; Siegel, Mark S.; Harper, Frank D.; and Dwiggins, John H., 6,331,228, Cl. 162-117.000.

Foschaar, James: *See*—
Luo, Robert Y.; Schmitz, Adele; Brown, Julia; Foschaar, James; Hyman, Daniel J.; and Hsu, Tsung-Yuan, 6,331,257, Cl. 216-13.000.

Foster, Chuck. Financial transaction system. 6,332,134, Cl. 705-39.000.

Foto-Wear, Inc.: *See*—
Hare, Donald S.; and Williams, Scott A., 6,331,374, Cl. 430-211.000.

Fotouhi, Nader; Gillespie, Paul; Guthrie, Robert William; Pietranico-Cole, Sherrie Lynn; and Yun, Weiya, to Hoffmann-La Roche Inc. Diaminopropionic acid derivatives. 6,331,640, Cl. 549-72.000.

Foucher, Daniel: *See*—
Conklin, Jeffrey; Foucher, David; and Foucher, Daniel, 6,332,135, Cl. 705-80.000.

Foucher, David: *See*—
Conklin, Jeffrey; Foucher, David; and Foucher, Daniel, 6,332,135, Cl. 705-80.000.

Foulger, Stephen H., to Pirelli Cables and Systems LLC. Stranded conductor filling compound and cables using same. 6,331,353, Cl. 428-379.000.

Fox, Barbara A.: *See*—
Simons, Corey; Pearson, Terrence S.; Noel, Chris R.; Kidder, Joseph D.; Branscomb, Brian; Langrind, Nicholas A.; Sullivan, Daniel J.; and Fox, Barbara A., 6,332,198, Cl. 714-6.000.

Foxconn Precision Components Co., Ltd.: *See*—
Lee, Hsieh Kun; and Lee, Don-Yun, 6,330,908, Cl. 165-185.000.
Lin, Yeu-Lih; and Huang, Aimin, 6,330,905, Cl. 165-80.300.

Foy, John S.: *See*—
Leonard, Jay F.; and Foy, John S., 6,330,872, Cl. 123-193.500.

Framatome: *See*—
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Franceschelli, Anthony John: *See*—
Manteiga, John Alan; Dykhuizen, Cornelius Harm; Joseph, Thomas Peter; Wilusz, Christopher James; Troup, Robert Eugene; Boger, Ethan; and Franceschelli, Anthony John, 6,330,985, Cl. 244-54.000.

Francese, Jose L.: *See*—
Turturro, Vincent; Francese, Jose L.; Gottlieb, Saul; and Kortenbach, Juergen, 6,331,165, Cl. 600-562.000.

Franzen, Petra: *See*—
Miyazono, Kohei; ten Dijke, Peter; Franzen, Petra; Yamashita, Hidetoshi; and Heldin, Carl-Henrik, 6,331,621, Cl. 536-232.000.

Frederick, Dale F.: *See*—
Barkataki, Shan; Dousette, Patricia J.; Frederick, Dale F.; Harte, Stuart H.; and Johnson, Gary R., 6,332,210, Cl. 717-1.000.

Freedman, Richard: *See*—
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Freeland, Gary L.: *See*—
Lence Barreiro, Juan A.; Huang, Harry Z.; Moon, Chouhwan; Freeland, Gary L.; and Mashiak, Robert H., 6,330,936, Cl. 187-393.000.

Freeman, John Jay: *See*—
Nagl, Alan Thomas; and Freeman, John Jay, 6,330,828, Cl. 73-668.000.

Freid, Jim; Landry, Michael E.; and Wagner, Erik J., to Spinal Concepts, Inc. System and method for stabilizing the human spine with a bone plate. 6,331,179, Cl. 606-61.000.

French, Ronald. Emergency apparatus for evacuating air from the body cavity. 6,330,882, Cl. 128-200.260.

Frey, Monika: *See*—
Chomet, Paul S.; Frey, Monika; and Gierl, Alfons, 6,331,660, Cl. 800-278.000.

Freyer, Paula D.: *See*—
Burke, Michael A.; Freyer, Paula D.; Hebbar, Mohan A.; Seth, Brij B.; Swartzbeck, Gary W.; and Zagar, Thomas Walter, 6,331,217, Cl. 148-522.000.

Fridman, Jose: *See*—
Garde, Douglas; Zatsman, Alexei; Lezerovitz, Aryeh; Greenfield, Zvi; Levine, David R.; and Fridman, Jose, 6,332,188, Cl. 712-204.000.

Friedl, Jon H.: *See*—
Aylott, Jonathan W.; Chen-Esterlit, Zoe; Friedl, Jon H.; Kopelman, Raoul; Savvateev, Vadim N.; and Shinar, Joseph, 6,331,438, Cl. 436-172.000.

Friedreich, Willibald: *See*—
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Friesen, Raymond J.; and Ostrovsky, Leonid, to Raynor Canada Inc. Z-shaped strut for door panel. 6,330,901, Cl. 160-201.000.

Friess, Werner; Jahnel, Harald; Vogt, Christian; and Morgner, Dietmar, to Feodor Burgmann Dichtungswerke GmbH & Co. Conduit vibration decoupling device for use in exhaust systems. 6,331,019, Cl. 285-49.000.

Froimowitz, Mark: *See*—
Brugnara, Carlo; Halperin, Jose; Bellot, Emile M., Jr.; Froimowitz, Mark; Lombardy, Richard John; Clifford, John J.; Gao, Ying-Duo; Haidar, Reem M.; Kelleher, Eugene W.; Kher, Falguni M.; Moussa, Adel M.; Sachdeva, Yesh P.; Sun, Minghua; and Taft, Heather N., 6,331,564, Cl. 514-520.000.

Frolov, George, to Harrow Products, Inc. Anti-jam locking mechanism for electronic security system. 6,330,817, Cl. 70-280.000.

Fry' s Metals, Inc.: *See*—
McGrath, Peter T.; and Owei, Abayomi I., 6,331,201, Cl. 106-1.220.

Fuji Photo Film Co., Ltd.: *See*—
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Kamata, Kazuo; and Kamata, Mitsuro, 6,332,059, Cl. 396-6.000.
Kawamura, Koichi; and Oohashi, Hidekazu, 6,331,375, Cl. 430-270.100.
Morita, Kiyoo; Takahashi, Daisuke; Shiga, Hideaki; Ishihara, Yusuke; and Tsuyuki, Seiji, 6,331,922, Cl. 360-132.000.
Nakazawa, Makoto; Orimoto, Masaaki; Nishimura, Toru; and Itoh, Atsushi, 6,331,903, Cl. 358-487.000.

Fujii, Mitsumi: *See*—
Murai, Taeko; Matsumoto, Shuzo; Fujii, Mitsumi; Nakano, Tomoaki; Makita, Hideyuki; Ohta, Yoshihisa; Kakuda, Shinichi; and Hirota, Tetsuro, 6,331,052, Cl. 347-68.000.

Fujii, Takahisa: *See*—
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Fujii, Toshiaki: *See*—
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Fujiki, Toshihiro: *See*—
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Fujikiko Kabushiki Kaisha: *See*—
Watanabe, Hiroshi; Ohya, Masakiyo; and Shibata, Masato, 6,330,836, Cl. 74-434.000.

Fujimori, Yasuhiro: *See*—

Kondo, Tetsujiro; Fujimori, Yasuhiro; Carrig, James J.; and Ghosal, Sugata, 6,332,042, Cl. 382-239.000.

Fujimoto, Katsuhito; Kamada, Hiroshi; and Kurokawa, Koji, to Fujitsu Limited. Document image recognition apparatus and computer-readable storage medium storing document image recognition program. 6,332,046, Cl. 382-289.000.

Fujimura, Susumu: *See*—
Shibata, Noboru; Tanaka, Tomoharu; Nakai, Hiroto; Yamamura, Toshio; and Fujimura, Susumu, 6,331,945, Cl. 365-185.030.

Fujinami, Yasushi: *See*—
Kawamura, Makoto; and Fujinami, Yasushi, 6,332,057, Cl. 386-95.000.

Fujioka, Toshio: *See*—
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Fujisawa Pharmaceutical Co., Ltd.: *See*—
Hori, Yasuhiro; Tsurumi, Yasuhisa; Takase, Shigehiro; Hatanaka, Hiroshi; Sakamoto, Kazutoshi; Hashimoto, Seiji; Ohki, Hidenori; Tojo, Takashi; Matsuda, Keiji; and Kawabata, Kohji, 6,331,521, Cl. 514-9.000.

Fujita, Tadao: *See*—
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Fujitani, Sakae; Suzuki, Yuzuru; and Kagawa, Masaki, to Minebea Co., Ltd. Actuator. 6,331,746, Cl. 310-263.000.

Fujitsu Limited: *See*—
Fujimoto, Katsuhito; Kamada, Hiroshi; and Kurokawa, Koji, 6,332,046, Cl. 382-289.000.
Kezuka, Satoshi; and Sadakata, Takayuki, 6,331,256, Cl. 210-712.000.
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Matsuo, Shinichiro, 6,331,980, Cl. 370-395.000.
Minami, Akira; and Nanba, Yoshiyuki, 6,331,966, Cl. 369-13.000.
Nakamura, Yutaka; Koezuka, Tetsuo; Komoriya, Hitoshi; and Hirahara, Takao, 6,331,891, Cl. 356-401.000.
Tanaka, Hitoshi; Kobori, Masao; and Tachibana, Ikuko, 6,332,203, Cl. 714-42.000.
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Fujitsu Quantum Devices Limited: *See*—
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Fujiwara, Hisao: *See*—
Okumura, Haruhiko; Kinno, Akira; Fujiwara, Hisao; Itoh, Goh; and Kamiura, Norihiko, 6,331,844, Cl. 345-87.000.

Fujiwara, Toshio, to Kabushiki Kaisha Miyake Design Jimusho. Circular knitted fabric and method for forming article from the same. 6,330,814, Cl. 66-8.000.

Fujiwara, Yasuki: *See*—
Satoh, Makoto; Fujiwara, Yasuki; and Imai, Akio, 6,331,501, Cl. 502-128.000.

Fujiyoshi, Tatsumi: *See*—
Yamada, Yukimitsu; Kawahata, Ken; Hebiguchi, Hiroyuki; Fujiyoshi, Tatsumi; and Saito, Junichi, 6,331,862, Cl. 345-660.000.

Fukami, Harukazu: *See*—
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Fukuda, Hiroyuki; and Matsui, Shinzo, to Olympus Optical Co., Ltd. Coded data output apparatus. 6,331,901, Cl. 358-1.900.

Fukuhara, Hideyuki; and Ashigaki, Shigeo, to Texas Instruments Incorporated. Fuse in top level metal and in a step, process of making and process of trimming. 6,331,739, Cl. 257-789.000.

Fukunaga, Kunihiko; Oshima, Hironori; and Sakamoto, Moritaka, to Hitachi Kizai, Inc. Free access floor. 6,330,770, Cl. 52-220.200.

Fuller, Robert: *See*—
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Fuller, Robert M.; Epler, Frederick A.; and Manowski, Maxwell E., to Aspect Telecommunications Corporation. Personal communicator telephone system. 6,332,082, Cl. 455-461.000.

Fumoux, Christine: *See*—
Guilloud, Jean-Claude; Collin, Dominique; Julliard, Jacques; and Fumoux, Christine, 6,332,027, Cl. 381-71.100.

Funahata, Katsuyuki: *See*—
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Funayama, Ryuji; Konya, Minehiro; and Takezawa, Hajime, to Sharp Kabushiki Kaisha. Image processing device. 6,332,038, Cl. 382-190.000.

Furlan, John Louis Warpakowski; and Driscoll, Edward, Jr., to Be Here Corporation. Method and apparatus for electronically distributing motion panoramic images. 6,331,869, Cl. 348-36.000.

Furman, Bruce Kenneth: *See*—
Angelopoulos, Marie; Dimitrakopoulos, Christos Dimitrios; Furman, Bruce Kenneth; Graham, Teresita Ordonez; and Lien, Shui-Chih Alan, 6,331,356, Cl. 428-411.100.

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Munakata, Takeo; Kikuchi, Naoshi; Shinohara, Takashi; Banse, Hideo; Kaneko, Takao; Akasaka, Hiroji; Aida, Yukikatsu; Shimokura, Naoyoshi; Ishikubo, Yuji; Okada, Tetsuya; and Suzuki, Tamezo, 6,331,677, Cl. 174-128.100.

Furukimi, Osamu: *See*—
Toyooka, Takaaki; Yorifuji, Akira; Nishimori, Masanori; Itadani, Motoaki; Hashimoto, Yuji; Okabe, Takatoshi; Tanaka, Nobuki; Kanayama, Taro; Furukimi, Osamu; Morita, Masahiko; Hira, Takaaki; and Matsuoka, Saiji, 6,331,216, Cl. 148-320.000.

Furukubo, Tatsumi: *See*—
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Fusaro, James M.; Darveaux, Robert F.; and Rodriguez, Pablo, to Amkor Technology, Inc. Methods of making thin integrated circuit device packages with improved thermal performance and substrates for making the packages. 6,331,451, Cl. 438-126.000.

G.D. Searle & Co.: *See*—
Ng, John S.; Wang, Ping T.; Baez, Julio A.; Liu, Chin; Anderson, Dennis K.; Lawson, Jon P.; Erb, Bernhard; Wieczorek, Joseph; Mucciariello, Gennaro; Vanzanella, Fortunato; Kunda, Sastry A.; Letendre, Leo J.; Pozzo, Mark J.; Sing, Yuen-Lung L.; and Yonan, Edward E., 6,331,622, Cl. 540-41.000.

G.D Societa' per Azioni: *See*—
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Gaarde, William A.: *See*—
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Gabriele, Peter D.: *See*—
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Gagnebien, Didier: *See*—
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Galacteros, Frederick: *See*—
Brugnara, Carlo; Beuzard, Yves; Galacteros, Frederick; and De Francheschi, Lucia, 6,331,557, Cl. 514-423.000.

Galian, Francois. Method of operating a refrigerating unit with a refrigerant fluid circuit. 6,330,805, Cl. 62-196.100.

Galimberti, Maurizio; and Albizzati, Enrico, to Basell Technology Company bv. Elastomeric copolymers of ethylene and propylene. 6,331,600, Cl. 526-160.000.

Gall, Peter J., to Verdicom, Inc. Method of fabricating integrated circuit package with opening allowing access to die. 6,331,452, Cl. 438-127.000.

Gallagher, Timothy Francis: *See*—
Carr, Thomas Joseph; Desjarlais, Renee Louise; Gallagher, Timothy Francis; Halbert, Stacie Marie; Oh, Hye-Ja; Thompson, Scott Kevin; Veber, Daniel Frank; Yamashita, Dennis Shinji; and Yen, Jack Hwekwo, 6,331,542, Cl. 514-237.800.

Galligan, Eileen Ann: *See*—
Chaudhari, Praveen; Galligan, Eileen Ann; Doyle, James Patrick; Lacey, James Andrew; Lien, Shui-Chih Alan; Nakano, Hiroki; and Lu, Minhua, 6,331,381, Cl. 430-320.000.

Gallily, Ruth: *See*—
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GAM Investments, L.L.C.: *See*—
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Gambale, Richard A.; Forcucci, Stephen J.; Weiser, Michael F.; Choh, Richard T.; and Forde, Sean, to C.R. Bard, Inc. Flexible vascular inducing implants. 6,331,185, Cl. 623-1.100.

Gambogi, Joan; Fuller, Robert; and Berta, Jodie, to Colgate-Palmolive Co. Color changing liquid cleaning composition comprising red dyes. 6,331,515, Cl. 510-424.000.

Gampa, Ravishanke V.: *See*—
Ross, Michael J.; Segars, James E.; Cummings, William G.; Barrios, Carlos M.; and Gampa, Ravishanke V., 6,332,098, Cl. 700-226.000.

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Ganz, Thomas: *See*—
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Garde, Douglas; Zatsman, Alexei; Lezerovitz, Aryeh; Greenfield, Zvi; Levine, David R.; and Fridman, Jose, to Analog Devices, Inc. Digital signal processor with bit FIFO. 6,332,188, Cl. 712-204.000.

Gardner, Daniel S.: *See*—
Ko, Soo S.; DeLucca, George V.; Duncia, John V.; Santella, Joseph B., III; and Gardner, Daniel S., 6,331,541, Cl. 514-237.200.

Gardner, David S: *See*—
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Gardner, Richard Lynn, Jr.; White, Joseph M.; Lester, Matthias Albert; and Irwin, Richard A., to Hewlett-Packard Company. Guidance system and method for an automated media exchanger. 6,331,714, Cl. 250-559.290.

Gardner, Robert: *See*—
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Garvey, David S.; de Tejada, Inigo Saenz; Earl, Richard A.; and Khanapure, Subhash P., to NitroMed, Inc. Nitrosated and nitrosylated phosphodiesterase inhibitors, compositions and methods of use. 6,331,543, Cl. 514-250.000.

Gary, Theodore Allen: *See*—

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Gatfield, Ian-Lucas; and Hilmer, Jens-Michael, to Haarmann & Reimer GmbH. Process for the preparation of aromatic carbonyl compounds from styrenes. 6,331,655, Cl. 568-435.000.

Gazit, Aviv: *See*—
Hirth, Klaus P.; Mann, Elaina; Shawyer, Laura K.; Ullrich, Axel; Szekely, Istvan; Bajor, Tamas; Haimichael, Janis; Orfi, Laszlo; Levitzki, Alex; Gazit, Aviv; Tang, Peng Cho; and Lammers, Reiner, 6,331,555, Cl. 514-378.000.

GE Medical Systems S.A.: *See*—
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Gearhart, John D.; and Shamblott, Michael Joseph, to John Hopkins University School of Medicine, The. Human enbryonic germ cell and methods of use. 6,331,406, Cl. 435-7.210.

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Gebhardt, Ronald Frank. Method of treating cement kiln dust for recovery and recycle. 6,331,207, Cl. 106-751.000.

Gedl, Karl; Friedreich, Willibald; Schuhmacher, Thomas; and Überreiter, Andreas, to U.S. Philips Corporation. Circuit arrangement for processing a video signal, including means for avoiding a vertical color shift at horizontal color transitions. 6,332,056, Cl. 386-21.000.

Geibel, Jon F.: *See*—
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Geiger, Charles Wayne, to Hehr International. Vehicle door with anti-flutter catch assembly, and method of preventing vehicle door flutter. 6,331,030, Cl. 296-146.900.

Geissler, Ulrich, to Clariant GmbH. Polyvinyl ester dispersions and methods for their preparation. 6,331,587, Cl. 524-459.000.

Geldman, John S.; Ho, Son H.; Estakhrf, Petro; and Schadegg, John J., to Cirrus Logic, Inc. Disk drive control without identification fields. 6,332,182, Cl. 711-156.000.

Genentech, Inc.: *See*—
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Cabilly, Shmuel; Heyneker, Herbert L.; Holmes, William E.; Riggs, Arthur D.; and Wetzel, Ronald B., 6,331,415, Cl. 435-69.600.
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Liu, Hsin-Tuan; Dickman, Robert B.; Krabacher, Kenneth W.; Steinmetz, Gregory T.; Beacher, Brent F.; and Doloresco, Bryan K., 6,331,100, Cl. 416-238.000.
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Steber, Charles Evan; Morton, Harmon Lindsay; and McLeroy, Jacob Tussey, 6,331,110, Cl. 431-352.000.

General Surgical Innovations, Inc.: *See*—
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Genesys Telecommunications Laboratories, Inc.: *See*—
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Genetics Institute, Inc.: *See*—
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Genometrix Genomics Incorporated: *See*—
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Genova, Calogero; Giammasi, Giuseppe; and Buosi, Francesco, to Condea Augusta S.p.A. Detergent composition with a softening and protective action of natural fibres. 6,331,511, Cl. 510-119.000.

Genzyme Corporation: *See*—
Scheule, Ronald K.; Bagley, Rebecca G.; Eastman, Simon J.; Cheng, Seng H.; Marshall, John; Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Chang, Chau-Dung; Hubbard, S. Catherine; Johnson, Duane E.; Maneval, Daniel C.; Shepard, H. Michael; and Gregory, Richard J., 6,331,524, Cl. 514-44.000.

Geoffroy, André: *See*—
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Georgia Tech Research Corporation: *See*—
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Gerald, Christophe; Hartig, Paul R.; Branchek, Theresa; and Weinshank, Richard L., to Synaptic Pharmaceutical Corporation. Uses of the 5-HT_4 receptor. 6,331,401, Cl. 435-7.100.

Gerlach, Irene: *See*—
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Germain, Yves; Beal, Jean-Luc; and Le Roy, Christophe, to Elf Atochem S.A. Gas-impermeable elastic membrane and hydropneumatic accumulator equipped with this measure. 6,331,359, Cl. 428-476.300.

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Ghosal, Sugata: *See*—
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Giallorenzi, Thomas R; Kingston, Samuel C; Steagall, Robert W; Smith, Patrick J; and Barham, Steven T, to L-3 Communications Corporation. Synchronizer and method therefor and communications system incorporating same. 6,332,008, Cl. 375-356.000.

Giammasi, Giuseppe: *See*—
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Gill, Robert Bradley: *See*—
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Gillespie, Paul: *See*—

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Gilliland, Patrick B.; Jines, Carlos; and Washburn, Theodore, to Stratos Lightwave, Inc. Small format optical subassembly. 6,331,992, Cl. 372-50.000.

Gillis, Ian; and Knull, Craig, to Halliburton Energy Services, Inc. Pack-off bushing. 6,330,912, Cl. 166-177.400.

Gizmoz Ltd.: *See*—
Gever, Eval; Hermoni, Nir; Bergman, Orit; Tayar, Gil; Reshef, Eilon; Gill, Doron; Feuerstein, Addy; Caneti, Yaron; Oppenheim, Roy; Etam, Eran; Shpeizer, Zohar; Borer, Yoav; Livine, Eyal; Kikin, Ruth; Zuckerman, Oren; and Kaas, Ron, 6,331,861, Cl. 345-629.000.

Glace, William R.; Ibsen, Robert L.; and Skoler, George A. Dentifrice gel/paste compositions. 6,331,291, Cl. 424-49.000.

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Global FIA, Inc.: *See*—
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Goldenberg, Milton David, to Immunomedics, Inc. Method and kit for imaging and treating organs and tissues. 6,331,175, Cl. 604-522.000.

Golder Sierra LLC: *See*—
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Gonzalez, Carlos M.; and Cerna, James J., Jr., to NetCurrents, Inc. Apparatus and method of implementing fast internet real-time search technology (FIRST). 6,332,141, Cl. 707-10.000.

Good, Brad: *See*—
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Goodlive, Steven A.: *See*—
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Goodwin, Dennis; and Vrijburg, Gerben O., to ASM America, Inc. Gridded substrate transport spatula. 6,331,023, Cl. 294-1.100.

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Gordon-Kamm, William J.: *See*—
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Gorman, Peter Gregory. Personal monitor and method using identification to minimize interference. 6,332,094, Cl. 600-520.000.

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Goulet, Alan: *See*—
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Graham, Teresita Ordonez: *See*—
Angelopoulos, Marie; Dimitrakopoulos, Christos Dimitrios; Furman, Bruce Kenneth; Graham, Teresita Ordonez; and Lien, Shui-Chih Alan, 6,331,356, Cl. 428-411.100.

Grandcolas, Michael L.; Anthony, Wendell W.; Law, Patrick; Moss, Leslie; Petach, Teresa A.; and Tompkins, Peter, to Transaction Technology, Inc. Method and system for automatically harmonizing access to a software application program via different access devices. 6,332,131, Cl. 705-35.000.

Grant Industries, Inc.: *See*—
Wang, James; and Hrubec, Thomas J., 6,331,604, Cl. 528-29.000.

Graoco (Japan) Ltd: *See*—
Coombs, Peter M; and Seay, James R., 6,330,999, Cl. 270-58.180.

Grasso, Albert P.: *See*—
Van Dine, Leslie L.; and Grasso, Albert P., 6,331,366, Cl. 429-17.000.

Grasso, Charles; and Tieben, David Patrick, to Storage Technology Corporation. ESD-protected interface panel and associated methods. 6,331,928, Cl. 361-212.000.

Gravel, Donald P.: *See*—
MacDonald, Douglas B.; King, Jonathan J.; Sanders, Steven E.; Rheault, Alan E.; Dykstra, James R.; Waalkes, Michael L.; Walz, David A.; Williams, Patricia A.; Gravel, Donald P.; and Chang, Joseph, 6,330,773, Cl. 52-239.000.

Grazzini, Andrea J.: *See*—
Ladner, David L.; Grazzini, Andrea J.; and Konezny, Ronald E., 6,331,825, Cl. 340-988.000.

Great Plains Buffalo Products, Inc.: *See*—
Settle, Sheri Stotz, 6,330,786, Cl. 57-200.000.

Greaves, Wayne: *See*—
Esch, Hans van; and Greaves, Wayne, 6,331,361, Cl. 428-548.000.

Green, Evan D. H., to New Focus, Inc. Interferometer for monitoring wavelength in an optical beam. 6,331,892, Cl. 356-451.000.

Green, Harry Leonard, II: *See*—
Hu, Lawrence W.; Paul, David J.; Reis, Eugene Edward; and Green, Harry Leonard, II, 6,331,158, Cl. 600-232.000.

Green, Marvin L.: *See*—
Ramesh, Swaminathan; and Green, Marvin L., 6,331,596, Cl. 525-329.900.

Green, Michael W.; and Jensen, Andrew W., to Secure Computing Corporation. Secure server utilizing separate protocol stacks. 6,332,195, Cl. 713-201.000.

Green, Shawn: *See*—
Bennington, Gerard E.; Backer, George; Green, Shawn; Cooper, Bill; Spell, Dave; Rogers, Rosetta; and Davis, Bruce, 6,331,877, Cl. 348-731.000.

Greenberg, Edward: *See*—
Myers, Kenneth J., 6,331,915, Cl. 359-599.000.

Greenberg, Steven J.: *See*—
Kendall, Robert M.; and Greenberg, Steven J., 6,330,791, Cl. 60-39.110.

Greene, Val N.: *See*—
Organ, Donald V.; Deome, Mark E.; Techasaratoole, Rajaneekara; and Greene, Val N., 6,332,212, Cl. 717-4.000.

Greenfield, Zvi: *See*—
Garde, Douglas; Zatsman, Alexei; Lezerovitz, Aryeh; Greenfield, Zvi; Levine, David R.; and Fridman, Jose, 6,332,188, Cl. 712-204.000.

Greenlee, William; Gangly, Ashit; and Wasley, Jan W. F., to Neurogen Corporation. Certain 1-(2-naphthyl) and 1-(2-azanaphthyl)-4-(1-phenylmethyl)piperazines; dopamine receptor subtype specific ligands. 6,331,629, Cl. 544-377.000.

Greer, David E.: *See*—
Abroy, Hamid S.; Greer, David E.; and Leppla, John K., 6,331,684, Cl. 200-17.00R.

Gregory, Richard J.: *See*—
Scheule, Ronald K.; Bagley, Rebecca G.; Eastman, Simon J.; Cheng, Seng H.; Marshall, John; Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Chang, Chau-Dung; Hubbard, S. Catherine; Johnson, Duane E.; Maneval, Daniel C.; Shepard, H. Michael; and Gregory, Richard J., 6,331,524, Cl. 514-44.000.

Grehl, Matthias: *See*—
Stettner, Martin; Grehl, Matthias; and Meyer, Horst, 6,331,200, Cl. 75-736.000.

Grell, Karl-Ludwig: *See*—
Müntnich, Leo; and Grell, Karl-Ludwig, 6,330,748, Cl. 29-898.067.

Grenacher, Armin Volker: *See*—
Blankertz, Heinrich-Josef; Grenacher, Armin Volker; Sauer, Friedrich; Schwahn, Harald; Schönmann, Willi; and Röper, Michael, 6,331,656, Cl. 568-451.000.

Grenell, Burt Baskette. Satellite antenna enhancer and method and system for using an existing satellite dish for aiming replacement dish. 6,331,839, Cl. 343-840.000.

Gresens, Eugene O.: *See*—
Fitzgerald, Robert M.; Gresens, Eugene O.; and Broom, Ward P., 6,330,856, Cl. 100-52.000.

Grewer, Ruediger: *See*—
Stove, Andrew G.; Grewer, Ruediger; Carlsen, Ingwer; Svensson, Heino; Moennich, Karl-Juergan; Schmidt, Joachim; and Wendler, Thomas, 6,331,848, Cl. 345-156.000.

Griffiths, Paul: *See*—
Emery, Vincent C; and Griffiths, Paul, 6,331,417, Cl. 435-91.320.

Grimes, Charles W.: *See*—
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Griplock Pty Ltd.: *See*—
Bryce, Jonathan, 6,331,007, Cl. 280-11.300.

Grobe, Russell R.: *See*—
Sleger, Roger R.; and Grobe, Russell R., 6,331,044, Cl. 347-50.000.

Grois, Igor; Chen, Wenzong; and Matasek, Jeffrey A., to Molex Incorporated. Mounting system for a connector assembly to a substrate. 6,331,079, Cl. 385-53.000.

Groninger, Donn A.: *See*—
Arora, Gulshan K.; Groninger, Donn A.; Leech, Francis; and Hobbs, Bobby J., 6,330,790, Cl. 60-39.080.

Gros, Xavier: *See*—
Boleda, Miquel; Doval, Jose J; Serra, Albert; and Gros, Xavier, 6,331,038, Cl. 347-9.000.

Grossman, Franklin C.; Angel, David C.; and Seidel, David A., to Compuware Corporation. IR code instrumentation. 6,332,213, Cl. 717-4.000.

Grosu, George Theodore: *See*—
Venkatesan, Aranapakam Mudumbai; Grosu, George Theodore; and Baker, Jannie Lea, 6,331,563, Cl. 514-459.000.

Gruening, Ulrike, to Infineon Technologies AG. Use of dummy poly spacers and divot fill techniques for DT-aligned processing after STI formation for advanced deep trench capacitor DRAM. 6,331,459, Cl. 438-243.000.

Guegler, Karl; Beasley, Ellen M.; and Di Francesco, Valentina, to PE Corporation (NY). Isolated human kinase proteins, nucleic acid molecules encoding human kinase proteins, and uses thereof. 6,331,423, Cl. 435-194.000.

Gueret, Jean-Louis H., to L'Oreal. Make-up brush and method for manufacturing such a brush. 6,331,086, Cl. 401-129.000.

Guest, David William: *See*—
Fedouloff, Michael; Guest, David William; and Smith, Gillian Elizabeth, 6,331,631, Cl. 546-201.000.

Guey, Jiann-Ching: *See*—
Rydbeck, Nils; Molnar, Barbara; Guey, Jiann-Ching; Khayrallah, Ali; and Koilpillai, R. David, 6,332,006, Cl. 375-262.000.

Guilloud, Jean-Claude; Collin, Dominique; Julliard, Jacques; and Fumoux, Christine, to Bertin & Cie; and Societe Nationale d'Etude et de Construction de moteurs d'Aviation - Snecma. Noise-absorption structures and walls constituted thereby. 6,332,027, Cl. 381-71.100.

Guldenfels, Dieter, to Habasit AG. Radius conveyor belt. 6,330,941, Cl. 198-853.000.

Gulley, William F. Lifting sling system with spaced, bi-directional loops. 6,331,024, Cl. 294-74.000.

Gunn, George Gerald: *See*—
Lee, Martin Kin-Fei; Gunn, George Gerald; and Placko, James Michael, 6,331,267, Cl. 264-401.000.

Guo, Lining: *See*—
Rubin-Wilson, Beth; Guo, Lining; Skokut, Tom; Young, Scott; Folkerts, Otto; Armstrong, Katherine; and Cowen, Neil M., 6,331,664, Cl. 800-298.000.

Guo, Qing-Dong: *See*—
Au-Yeung, Vincent; Guo, Qing-Dong; and Wang, Xing Long, 6,331,912, Cl. 359-484.000.

Gupta, Deepnarayan; and Zhang, Yongming, to Hypres, Inc.; and Conductus, Inc. On-chip long Josephson junction (LJJ) clock technology. 6,331,805, Cl. 331-107.00S.

Gupta, Subhash; and Chen, Susan Hsuching, to Advanced Micro Devices, Inc. Via structure in an integrated circuit utilizing a high conductivity metal interconnect and a method for manufacturing same. 6,331,732, Cl. 257-752.000.

Gupte, Sunil Purushotham: *See*—
Chaudhari, Raghunath Vitthal; Puthenmadathil, Jayasree; and Gupte, Sunil Purushotham, 6,331,502, Cl. 502-162.000.

Gurevich, Vladimir: *See*—
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Gustafson, Ammon: *See*—
Rhoads, Geoffrey; and Gustafson, Ammon, 6,332,031, Cl. 382-100.000.

Gustafson, Donald E.; Dowdle, John R.; and Elwell, John M., Jr., to Charles Stark Draper Laboratory, Inc., The. Deeply-integrated adaptive GPS-based navigator with extended-range code tracking. 6,331,835, Cl. 342-357.060.

Guthart, Gary S.: *See*—
Tierney, Michael J.; Cooper, Thomas G.; Julian, Chris A.; Blumenkranz, Stephen J.; Guthart, Gary S.; and Younge, Robert G., 6,331,181, Cl. 606-130.000.

Guthrie, Robert William: *See*—
Fotouhi, Nader; Gillespie, Paul; Guthrie, Robert William; Pietranico-Cole, Sherrie Lynn; and Yun, Weiya, 6,331,640, Cl. 549-72.000.

Gutierrez, Carlos Tenorio; and Corona, Artemio Martinez, to Servicios Condumex S.A. de C.V. Primary cable of compressed conductor. 6,331,676, Cl. 174-128.100.

Guttman, Jacob: *See*—
Nieh, Benjamin B.; Pillar, John F.; Guttman, Jacob; Marchand, Bernard; and Rabie, Sameh, 6,331,970, Cl. 370-230.000.

Guyer, Robert A.: *See*—
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Guzovsky, Eduard: *See*—
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Gwynn, Michael; Kallender, Howard; Katz, Lisa K; Sylvester, Daniel; Traini, Christopher M; and Warren, Richard Lloyd, to SMithKline Beecham Corporation. TopA. 6,331,411, Cl. 435-69.100.

H. Lundbeck A/S: *See*—
Perregaard, Jens Kristian; Mikkelsen, Ivan; and Pedersen, Henrik, 6,331,544, Cl. 514-252.130.

Haarmann & Reimer GmbH: *See*—
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Haas, Wilhelm: *See*—
Linker, Karl-Heinz; Findeisen, Kurt; Andree, Roland; Drewes, Mark-Wilhelm; Lender, Andreas; Schallner, Otto; Haas, Wilhelm; Santel, Hans-Joachim; and Dollinger, Markus, 6,331,507, Cl. 504-244.000.

Haase, Wolfgang: *See*—
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Habasit AG: *See*—
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Hachisuka, Atsushi: *See*—
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Hacquard, Huburt: *See*—
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Hada, Frank Stephen: *See*—
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Haddon, Robert C.; and Chen, Jian, to University of Kentucky Research Foundation. Method of solubilizing shortened single-walled carbon nanotubes in organic solutions. 6,331,262, Cl. 252-502.000.

Haefele, Ulrich; and Voegele, Michael, to Richard Wolf GmbH. Electronic endoscope. 6,331,156, Cl. 600-179.000.

Hagersten, Erik E.; Jackson, Christopher J.; and Nguyen, Hien, to Sun Microsystems, Inc. Multiprocessor computer system employing a mechanism for routing communication traffic through a cluster node having a slice of memory directed for pass through transactions. 6,332,165, Cl. 709-238.000.

Hagersten, Erik E., to Sun Microsystems, Inc. Multiprocessing system configured to perform efficient block copy operations. 6,332,169, Cl. 710-5.000.

Haggerty, William T.; Andlauer, Phillip; and Negus, Stephen H., to Enterasys Networks, Inc. Multicast switching. 6,331,983, Cl. 370-400.000.

Hagiwara, Yoshihiro: *See*—

Yakushiji, Toru; Mizoguchi, Tadashi; Suetsucu, Junichi; Minemoto, Hitoshi; Takemoto, Hitoshi; Shima, Kazuo; and Hagiwara, Yoshihiro, 6,331,046, Cl. 347-55.000.

Hahn, John Timothy; Venturino, Michael Barth; Berken, Bradley John; St. Louis, Raymond Gerard; and Datta, Paul Joseph, to Kimberly-Clark Worldwide, Inc. Apparatus and process for forming a laid fibrous web with enhanced basis weight capability. 6,330,735, Cl. 19-296.000.

Haidar, Reem M.: *See*—
Brugnara, Carlo; Halperin, Jose; Bellot, Emile M., Jr.; Froimowitz, Mark; Lombardy, Richard John; Clifford, John J.; Gao, Ying-Duo; Haidar, Reem M.; Kelleher, Eugene W.; Kher, Falguni M.; Moussa, Adel M.; Sachdeva, Yesh P.; Sun, Minghua; and Taft, Heather N., 6,331,564, Cl. 514-520.000.

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Haines, Robert E.: *See*—
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Haji, Hiroshi, to Matsushita Electric Industrial Co., LTD. Method for forming a gold plating electrode a substrate based on the electrode forming method, and a wire bonding method utilizing this electrode forming method. 6,331,347, Cl. 428-209.000.

Halbert, Stacie Marie: *See*—
Carr, Thomas Joseph; Desjarlais, Renee Louise; Gallagher, Timothy Francis; Halbert, Stacie Marie; Oh, Hye-Ja; Thompson, Scott Kevin; Veber, Daniel Frank; Yamashita, Dennis Shinji; and Yen, Jack Hwekwo, 6,331,542, Cl. 514-237.800.

Haldeman, Paul: *See*—
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Hale, Kelly H.: *See*—
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Hall, David R. Superhard drill bit heel, gage, and cutting elements with reinforced periphery. 6,330,924, Cl. 175-430.000.

Hallén, Hans; and Johansson, Karl-Erik, to Höganäs AB. Use of a metal powder for surface coating by submerged arc welding. 6,331,688, Cl. 219-73.210.

Hallewell, Robert A.; and Mullenbach, Guy T., to Chiron Corporation. DNA construct comprising a vector for expression of human cytoplasmic Cu/Zn superoxide dismutase in *E. coli* and method of use of same. 6,331,421, Cl. 435-189.000.

Halliburton Energy Services, Inc.: *See*—
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Gillis, Ian; and Knull, Craig, 6,330,912, Cl. 166-177.400.

Halperin, Jose: *See*—
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Halpern, Richard G. Automated methods and apparatus for programmed periodic replenishment of principal with annual adjustment to future interest rates. 6,332,132, Cl. 705-36.000.

Hamada, Mana: *See*—
Ohashi, Masahiro; Hamada, Mana; Yonezawa, Tomonori; Kurohmaru, Shunichi; Kouhashi, Yasuo; Matsuo, Masatoshi; and Toujima, Masayoshi, 6,332,152, Cl. 708-490.000.

Hamada, Mototsugu; and Kuroda, Tadahiro, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit device having transistor logic and load circuits. 6,331,796, Cl. 327-208.000.

Hamann, Hans-Jürgen: *See*—
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Hamilton, Darlene G.: *See*—
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Hamilton, Gregory S.; Norman, Mark H.; and Wu, Yong-Qian, to GPI Nil Holdings, Inc. Carboxylic acids and carboxylic acid isosteres of N-heterocyclic compounds. 6,331,537, Cl. 514-215.000.

Hammons, A. Roger, Jr.: *See*—
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Han, Chang Wook, to LG Electronics Inc. Liquid crystal display and method for forming the same. 6,331,880, Cl. 349-43.000.

Hanabe, Murali: *See*—
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Hancock, Andrew H., to Heartport, Inc. Apparatus and methods for off-pump cardiac surgery. 6,331,157, Cl. 600-232.000.

Handorf, Donald F.: *See*—
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Hanna, Dean S. Ribbon curling machine and process. 6,331,155, Cl. 493-459.000.

Hannan, James M.: *See*—
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Hannon, Gregory J.: *See*—
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Hanson, Dan A.; and Topits, Kirk, to Teleco, Inc. Integrated telecommunication system and method with voice messaging and local area paging. 6,332,085, Cl. 455-557.000.

Hansson, Thomas W.: *See*—
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Hara, Tetsuya, to Mitsubishi Denki Kabushiki Kaisha. Branch prediction method using a prediction table indexed by fetch-block address. 6,332,190, Cl. 712-240.000.

Hara, Yoshihiko: *See*—
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Harada, Masana: *See*—
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Harada, Muneo: *See*—
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Hardzinski, Mary Louise: *See*—
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Hare, Donald S.; and Williams, Scott A., to Foto-Wear, Inc. Imaging transfer system and process for transferring image and non-image areas thereof to a receptor element. 6,331,374, Cl. 430-211.000.

Harness, Harry: *See*—
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Harness, Henry; and Harness, Harry. Internal combustion engine fuel management system. 6,330,825, Cl. 73-118.100.

Harper, Frank D.: *See*—
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Harris, Brook Lee. Individual key covers for computer keyboards. 6,331,083, Cl. 400-493.000.

Harris Corporation: *See*—
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Harris, David J.: *See*—
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Harris, Jeffrey Martin; Woodward, Ernest Earl; and Borgstahl, Ronald W., to Motorola, Inc. Personal data storage and transaction device system and method. 6,331,972, Cl. 370-313.000.

Harris, Neil John: *See*—
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Harrison, William J.: *See*—
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Harrow Products, Inc.: *See*—
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Harth, Arno; Tippmann-Krayer, Petra; Holzner, Peter; Korte, Werner; Schrodi, Karl; and Klug, Andreas, to Siemens Aktiengesellschaft. Method and network component for switching low bit rate connections between input modules and output modules in a communication network. 6,331,981, Cl. 370-395.100.

Hartig, Paul R.: *See*—
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Hartl, F. Ulrich: *See*—
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Harvey, Colin E.; and Mohn, Kenneth L., to Merck & Co., Inc. Method for inhibiting dental resorptive lesions. 6,331,533, Cl. 514-108.000.

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Hasegawa, Mark M.; Daneman, Steven A.; DeJesus, Ronaldo R.; and Babel, Henry W., to McDonnell Douglas Corporation. Articles with stable coatings having tailorable optical properties. 6,331,357, Cl. 428-446.000.

Hasegawa, Tatsuya; Ohkubo, Masaichi; Ito, Yoshihiro; and Tokunaga, Sanae, to Kabushiki Kaisha Toshiba. Flat panel display device and manufacturing method thereof. 6,331,883, Cl. 349-152.000.

Hashimoto, Kiyofumi: *See*—
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Hashimoto, Yuji: *See*—
Toyooka, Takaaki; Yorifuji, Akira; Nishimori, Masanori; Itadani, Motoaki; Hashimoto, Yuji; Okabe, Takatoshi; Tanaka, Nobuki; Kanayama, Taro; Furukimi, Osamu; Morita, Masahiko; Hira, Takaaki; and Matsuoka, Saiji, 6,331,216, Cl. 148-320.000.

Hashizume, Jiro: *See*—
Kamada, Kazuo; Koyama, Shoichi; Asahi, Nobuyuki; Suzuki, Toshiyuki; Shiohama, Eiji; Sugimoto, Masaru; Yamamoto, Shohei; Hashizume, Jiro; Akiniwa, Taishi; and Tanaka, Takashi, 6,331,063, Cl. 362-237.000.

Hass, Steven N.; Bolan, Michael L.; Fekete, Nicholas M. G.; and Lee, Robert D., to Dallas Semiconductor Corporation. Electronic labeling systems and methods and electronic card systems and methods. 6,330,977, Cl. 235-487.000.

Hastings, Lawrence C., to Hearme. Software inventory control system. 6,332,217, Cl. 717-11.000.

Hatae, Shinichi; and Kobayashi, Takashi, to Canon Kabushiki Kaisha. Data communication system, apparatus and controlling method thereof. 6,332,159, Cl. 709-224.000.

Hatanaka, Hiroshi: *See*—
Hori, Yasuhiro; Tsurumi, Yasuhisa; Takase, Shigehiro; Hatanaka, Hiroshi; Sakamoto, Kazutoshi; Hashimoto, Seiji; Ohki, Hidenori; Tojo, Takashi; Matsuda, Keiji; and Kawabata, Kohji, 6,331,521, Cl. 514-9.000.

Hatano, Takuji; and Okada, Masakazu, to Minolta Co., Ltd. Liquid crystal device with composite layer of cured resin pillars and liquid crystal phase and method of producing the same. 6,331,881, Cl. 349-86.000.

Hatano, Takuji: *See*—
Masazumi, Naoki; Kobayashi, Nobuyuki; Okada, Masakazu; Hashimoto, Kiyofumi; and Hatano, Takuji, 6,331,884, Cl. 349-156.000.

Hatayama, Hitoshi; and Sasaoka, Eisuke, to Sumitomo Electric Industries, Ltd. Optical attenuator, plane waveguide type optical circuit having the same and optical attenuation system having the same. 6,332,055, Cl. 385-140.000.

Hatchard, Colin: *See*—
Blish, Richard C., II; Hatchard, Colin; and Morgan, Ian, 6,331,735, Cl. 257-777.000.

Hatori, Yoshinori: *See*—
Kaneko, Masahide; Koike, Atsushi; Hatori, Yoshinori; Yamamoto, Seiichi; and Higuchi, Norio, 6,332,123, Cl. 704-276.000.

Hattangady, Sunil V.: *See*—
Misium, George R.; and Hattangady, Sunil V., 6,331,492, Cl. 438-762.000.

Hattori, Katsuya; Nakamura, Akio; and Morishita, Mikio, to Kotobuki & Co., Ltd. Aqueous ink composition for ball-point pen. 6,331,203, Cl. 106-31.130.

Hattori, Masanori: *See*—
Tomita, Mamoru; Sotoyama, Kazuyoshi; Watanabe, Ryozo; Mizuguchi, Kenji; Shidara, Hideo; Wakao, Shoji; Hattori, Masanori; and Motoyoshi, Nobuyuki, 6,331,324, Cl. 426-634.000.

Hattori, Naoki: *See*—
Uno, Masaki; and Hattori, Naoki, 6,330,804, Cl. 62-175.000.

Haubrich, Raymond. Universal mechanical bag holder. 6,330,990, Cl. 248-99.000.

Haug, Thomas: *See*—
Cianciara, Wojciech; Fischer, Gerhard; and Haug, Thomas, 6,330,874, Cl. 123-406.200.

Hauptman, Steven, to Teradyne, Inc. Circuit and method for improved test and calibration in automated test equipment. 6,331,783, Cl. 324-765.000.

Häussling, Lukas: *See*—
Huff, Jürgen; Steuerle, Ulrich; Meixner, Hubert; Ehle, Beate; Paulus, Wolfgang; Lux, Jürgen Alfred; and Häussling, Lukas, 6,331,519, Cl. 510-475.000.

Haut, Robert E.; Longenecker, Michael L.; and Pike, Robert T., to Graco Children's Products Inc. Infant carrier mounting system. 6,331,032, Cl. 297-130.000.

Hawk, Homer J.; Setele, Thomas; and Brookhart, Craig, to MTD Products Inc. Tire testing apparatus and method. 6,330,822, Cl. 73-40.700.

Hawk, Richard: *See*—
Wallace, Johnny M.; and Hawk, Richard, 6,331,016, Cl. 280-763.100.

Hawthorne, Michael J.; Nickles, Stephen K.; and Onodipe, Bolanle, to New York Air Brake Corporation. Train handling techniques and analysis. 6,332,106, Cl. 701-19.000.

Hayakawa, Yoshihiro: *See*—
Matsuura, Shun; Kageyu, Satoshi; Kato, Hitoshi; Asai, Kayoko; Yoshio, Hiroaki; Kato, Tsuyoshi; Hayakawa, Yoshihiro; and Maruya, Kensuke, 6,332,003, Cl. 375-240.230.

Hayashi, Hiroaki: *See*—
Yamade, Takumi; Hayashi, Hiroaki; and Sako, Teruhisa, 6,331,868, Cl. 347-208.000.

Hayashi, Ryo; and Saito, Keishi, to Canon Kabushiki Kaisha. Defect compensation method for semiconductor element. 6,331,474, Cl. 438-476.000.

Hayashi, Teruyuki: *See*—
Marumo, Yoshinori; and Hayashi, Teruyuki, 6,331,890, Cl. 356-369.000.

Hayashi, Yasuhiro: *See*—
Shimamoto, Tetsuo; Inoue, Hidekazu; and Hayashi, Yasuhiro, 6,331,548, Cl. 514-300.000.

Hayashikawa, Hiroyuki; Eguchi, Satoshi; and Yamashita, Takayuki, to Matsushita Electric Industrial Co., Ltd. Gas laser oscillator. 6,331,995, Cl. 372-107.000.

Hayes, Thomas: *See*—
Jakobsen, James W.; Crespo, Carlito; and Hayes, Thomas, 6,330,859, Cl. 101-484.000.

Hearme: *See*—
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Heath, Michael S.; Oriaran, T. Philips; Siegel, Mark S.; Harper, Frank D.; and Dwiggins, John H., to Fort James Corporation. Printed, soft, bulky singleply absorbent paper having a serpentine configuration and low sidedness. 6,331,228, Cl. 162-117.000.

Hebbar, Mohan A.: *See*—
Burke, Michael A.; Freyer, Paula D.; Hebbar, Mohan A.; Seth, Brij B.; Swartzbeck, Gary W.; and Zagar, Thomas Walter, 6,331,217, Cl. 148-522.000.

Hebiguchi, Hiroyuki: *See*—
Yamada, Yukimitsu; Kawahata, Ken; Hebiguchi, Hiroyuki; Fujiyoshi, Tatsumi; and Saito, Junichi, 6,331,862, Cl. 345-660.000.

Hebrew University of Jerusalem, Yissum Research and Development Company of the: *See*—
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Hebrew University of Jerusalem, Yissum Research Development Company of the: *See*—
Hirth, Klaus P.; Mann, Elaina; Shawyer, Laura K.; Ullrich, Axel; Szekely, Istvan; Bajor, Tamas; Haimichael, Janis; Orfi, Laszlo; Levitzki, Alex; Gazit, Aviv; Tang, Peng Cho; and Lammers, Reiner, 6,331,555, Cl. 514-378.000.
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Hefferon, Eugene P.: *See*—
Baskey, Michael E.; Brice, Frank W.; Glassen, Steven G.; Hefferon, Eugene P.; Ratcliff, Bruce H.; Stagg, Arthur J.; and Valley, Stephen R., 6,332,171, Cl. 710-39.000.

Hehr International: *See*—
Geiger, Charles Wayne, 6,331,030, Cl. 296-146.900.

Hei, Derek J., to Cerus Corporation. Adsorbing pathogen-inactivating compounds with porous particles immobilized in a matrix. 6,331,387, Cl. 435-2.000.

Heidel, Raymond J.; Hill, Rodney; Taxon, Thomas N.; and McAllister, Lawerence, to Bally Gaming, Inc. Gaming machine payout controlling system and method. 6,332,099, Cl. 700-231.000.

Heimann, Nancy M.: *See*—
Heimann, Robert L.; Heimann, Nancy M.; Dalton, William M.; Taylor, Donald W.; and Scrivens, Todd W., 6,331,509, Cl. 508-136.000.

Heimann, Robert L.; Heimann, Nancy M.; Dalton, William M.; Taylor, Donald W.; and Scrivens, Todd W., to Elisha Technologies Co LLC. Corrosion resistant lubricants, greases, and gels. 6,331,509, Cl. 508-136.000.

Heimbrock, Richard H.; Webster, Matt; and Vogel, John, to Hill-Rom Services, Inc. Stretcher having a motorized wheel. 6,330,926, Cl. 180-65.500.

Hein, Peter: *See*—
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Heldin, Carl-Henrik: *See*—
Miyazono, Kohei; ten Dijke, Peter; Franzen, Petra; Yamashita, Hidetoshi; and Heldin, Carl-Henrik, 6,331,621, Cl. 536-232.000.

Hellberg, Mark R.: *See*—
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Klaveness, Jo; Rongved, Pål; Høgset, Anders; Tolleshaug, Helge; Cuthbertson, Alan; Hoff, Lars; Bryn, Klaus; Hellebust, Halldis; and Solbakken, Magne, 6,331,289, Cl. 424-9.520.
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Helot, Jacques H.; and Derocher, Michael D., to Hewlett-Packard Company. Computer docking station with anti-theft locking mechanisms for removable components. 6,331,934, Cl. 361-686.000.
Helsinki University Licensing Ltd. Oy: *See*—
Eriksson, Ulf; Olofsson, Birgitta; Alitalo, Kari; and Pajusola, Katri, 6,331,301, Cl. 424-145.100.
Hematronix Inc.: *See*—
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Hemm, Dieter; and Hellmann, Guenter, to Henkel-Ecolab GmbH & Co. OHG. Compact cleaner containing surfactants. 6,331,518, Cl. 510-445.000.
Hempel, Tarry A.: *See*—
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Henderson, P. Michael: *See*—
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Hengstenberg, Wayne R., to Streak Laboratories, Inc.; and Hematronix Inc. Erythrocyte sedimentation rate control. 6,331,435, Cl. 436-10.000.
Henkel-Ecolab GmbH & Co. OHG: *See*—
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Henlopen Manufacturing Co., Inc.: *See*—
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Hennessey, Kent P., to Atlantic Research Corporation. Erosion resistant rocket nozzle. 6,330,793, Cl. 60-271.000.
Hennessy, Bernard Michael: *See*—
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Henson, Michael R.: *See*—
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Herding GmbH Filtertechnik: *See*—
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Herding, Walter; and Raabe, Wolfgang, to Herding GmbH Filtertechnik. Sintered plastic particles filter element. 6,331,197, Cl. 55-523.000.
Herman, Lace J.: *See*—
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Hermans, Michael Alan; Burazin, Mark Alan; Hada, Frank Stephen; and Hong, Sung Ho, to Kimberly-Clark Worldwide, Inc. Method for making soft tissue. 6,331,230, Cl. 162-207.000.
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Gever, Eval; Hermoni, Nir; Bergman, Orit; Tayar, Gil; Reshef, Eilon; Gill, Doron; Feuerstein, Addy; Caneti, Yaron; Oppenheim, Roy; Etam, Eran; Shpeizer, Zohar; Borer, Yoav; Livine, Eyal; Kikin, Ruth; Zuckerman, Oren; and Kaas, Ron, 6,331,861, Cl. 345-629.000.
Hernandez, Nestor: *See*—
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Herrmann, Hans-Friedrich; and Hohner, Gerd, to Clariant GmbH. Polypropylene wax. 6,331,590, Cl. 525-55.000.
Hervé, Perrault; and Fabrice, Goly, to Automobile, Peugeot; and Automobiles Citroen. Method and device for controlling an electric actuator activating a functional system. 6,330,938, Cl. 188-158.000.
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Miller, Michael D.; and Hume, Garrard, 6,331,055, Cl. 347-92.000.
Phillips, Quintin T.; Haines, Robert E.; Baumunk, Mary B.; Heusinkveld, Jake; and Boockholdt, Darius, 6,332,062, Cl. 399-12.000.
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Seccombe, S. Dana; and Steinmetz, Charles R., 6,331,053, Cl. 347-85.000.
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Hickham Industries, Inc.: *See*—
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Hicks, James E., Jr.: *See*—
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Hieda, Katsuhiko, to Kabushiki Kaisha Toshiba. Semiconductor device and method for manufacturing the same. 6,331,734, Cl. 257-775.000.
Higashi, Mitsutoshi, to Shinko Electric Industries Co., Ltd. Multi-layer circuit board using anisotropic electro-conductive adhesive layer. 6,331,679, Cl. 174-260.000.
Higuchi, Norio: *See*—
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Hill, Joe T: *See*—
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Hill, Rodney: *See*—
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Hill-Rom Services, Inc.: *See*—
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Hinderks, Larry W., to Corporate Computer Systems. Adjustable CODEC with adjustable parameters. 6,332,119, Cl. 704-206.000.
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Hintzen, Werner, to Manibs Spezialarmaturen GmbH & Co. KG. Thermoweldable clip for conduits. 6,331,698, Cl. 219-535.000.
Hira, Takaaki: *See*—
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Hirabayashi, Yukiya, to Seiko Epson Corporation. SOI substrate, method for making the same, semiconductive device and liquid crystal panel using the same. 6,331,473, Cl. 438-455.000.
Hiraga, Tetsuo, to Matsushita Electric Industrial Co., Ltd. Human body detecting device and method therefor. 6,331,818, Cl. 340-573.100.
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Hirano, Yasuaki, to Sharp Kabushiki Kaisha. Circuit for storing and latching defective address data for a nonvolatile semiconductor memory device having redundant function. 6,331,949, Cl. 365-185.090.
Hirasago, Kiyomi, to Nissan Motor Co., Ltd. Vehicular run controlling apparatus and method for automotive vehicle. 6,332,108, Cl. 701-93.000.
Hirata, Shin-Ichi: *See*—
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Hirayama, Hiroshi; Kawamae, Osamu; Hirabayashi, Masayuki; Nagai, Yutaka; and Takeuchi, Toshifumi, to Hitachi, Ltd. Digital signal reproducing apparatus. 6,332,174, Cl. 711-4.000.
Hirayama, Masaki: *See*—
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Hiroki, Tsutomu, to Tokyo Electron Limited. Transportation system and processing apparatus employing the transportation system. 6,331,095, Cl. 414-222.010.

Hirooka, Akihiko: *See*—
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Hiroshige, Yuzo; and Ichikawa, Yoshiaki, to Hitachi, Ltd. Evaluation system for determining a percent a product is defective using a network. 6,332,114, Cl. 702-81.000.

Hiroshima, Tatsuo; Nakano, Koichi; Harada, Muneo; Matsumoto, Toshiyuki; and Hirota, Yoshihiro, to Sumitomo Metal Industries Ltd. Static capacitance-to-voltage converter and converting method. 6,331,780, Cl. 324-684.000.

Hirota, Takuya, to NEC Corporation. Semiconductor memory device and control method thereof. 6,331,959, Cl. 365-207.000.

Hirota, Tetsuro: *See*—
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Hirota, Yoshihiro: *See*—
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Hirth, Klaus P.; Mann, Elaina; Shawyer, Laura K.; Ullrich, Axel; Szekely, Istvan; Bajor, Tamas; Haimichael, Janis; Orfi, Laszlo; Levitzki, Alex; Gazit, Aviv; Tang, Peng Cho; and Lammers, Reiner, to University of California; Hebrew University of Jerusalem, Yissum Research Development Company of the; Biosignal LTD; Sugen, Inc.; and Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V. Treatment of platelet derived growth factor related disorders such as cancers. 6,331,555, Cl. 514-378.000.

Hirtz, Gangolf; Hollmann, Thomas; Rothermel, Albrecht; and Schweer, Rainer, to Deutsch THOMSON-Brandt GmbH. Method and device for arranging digitized image signals or data in orthogonal rows and columns. 6,331,875, Cl. 348-497.000.

Hitachi Chemical Company, Ltd.: *See*—
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Hitachi Electronic Devices Co., Ltd.: *See*—
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Hitachi Haramachi Semi-conductor, LTD: *See*—
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Hitachi Kizai, Inc.: *See*—
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Hirayama, Hiroshi; Kawamae, Osamu; Hirabayashi, Masayuki; Nagai, Yutaka; and Takeuchi, Toshifumi, 6,332,174, Cl. 711-4.000.
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Kato, Shigekazu; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, 6,330,755, Cl. 34-406.000.
Kato, Shigekazu; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, 6,330,756, Cl. 34-406.000.
Kawasaki, Kenji; Tanaka, Tetsuo; Morimoto, Yoshiaki; Nitta, Kunihisa; and Tanaka, Kimio, 6,332,145, Cl. 707-104.000.
Kitajima, Masaaki; Tsumura, Makoto; Mikami, Yoshiro; Funahata, Katsuyuki; Nagae, Yoshiharu; Wakui, Yoko; Saito, Ryuichi; Matsui, Makoto; and Nemoto, Fumiaki, 6,331,845, Cl. 345-88.000.
Nishiyama, Seiichi; Takaku, Shigetake; Takeda, Yoshiharu; Mikoshiba, Shigeo; Shiga, Tomokazu; and Hashimoto, Koji, 6,331,064, Cl. 362-260.000.
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Takei, Hiroyuki; and Sakamoto, Takeshi, 6,331,276, Cl. 422-82.090.
Terasaki, Takeshi; Miura, Hideo; Nakajima, Chikara; and Kitano, Makoto, 6,331,730, Cl. 257-688.000.
Tojyou, Tutomu; Shirai, Shoji; and Kato, Shinichi, 6,331,752, Cl. 313-441.000.
Uno, Masaki; and Hattori, Naoki, 6,330,804, Cl. 62-175.000.

Hlatky, Gregory G., to Equistar Chemicals, LP. Supported single-site catalyst and olefin polymerization process. 6,331,601, Cl. 526-171.000.

H' mimy, Hossam: *See*—
Shah, Ali R.; and H'mimy, Hossam, 6,332,076, Cl. 455-423.000.

Ho, Chung W., to Thin Film Module, Inc. High density flip chip BGA. 6,331,447, Cl. 438-108.000.

Ho, Son H.: *See*—
Geldman, John S.; Ho, Son H.; Estakhrf, Petro; and Schadegg, John J., 6,332,182, Cl. 711-156.000.

Ho, Thoi Huu: *See*—
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Hobbs, Bobby J.: *See*—
Arora, Gulshan K.; Groninger, Donn A.; Leech, Francis; and Hobbs, Bobby J., 6,330,790, Cl. 60-39.080.

Hocking, Grant; and Wells, Samuel L., to Golder Sierra LLC. Method and apparatus for tracking hydraulic fractures in unconsolidated and weakly cemented soils and sediments. 6,330,914, Cl. 166-250.100.

Hoe, Mee H.: *See*—
Rothman, James E.; Hartl, F. Ulrich; Hoe, Mee H.; Houghton, Alan; Takeuchi, Yoshizumi; and Mayhew, Mark, 6,331,299, Cl. 424-93.210.

Hoechst Schering AgrEvo GmbH: *See*—
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Hoff, Lars: *See*—
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Hoffmann, Jules: *See*—
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Hoffmann-La Roche Inc.: *See*—
Batcho, Andrew David; Hennessy, Bernard Michael; and Uskokovic, Milan Radoje, 6,331,642, Cl. 552-653.000.
Fotouhi, Nader; Gillespie, Paul; Guthrie, Robert William; Pietranico-Cole, Sherrie Lynn; and Yun, Weiya, 6,331,640, Cl. 549-72.000.

Hog, Norbert, to Robert Bosch GmbH. Device and method for operating a rain detector. 6,331,819, Cl. 340-604.000.

Hogan, Michael E.: *See*—
Balch, William J.; Hogan, Michael E.; and Mendoza, Leopoldo G., 6,331,441, Cl. 436-518.000.

Höganäs AB: *See*—
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Hogeston, Kermit: *See*—
DePrisco, Joseph; Good, Brad; Hogeston, Kermit; and Lahey, Brent, 6,331,691, Cl. 219-121.680.

Høgset, Anders: *See*—
Klaveness, Jo; Rongved, Pål; Høgset, Anders; Tolleshaug, Helge; Cuthbertson, Alan; Hoff, Lars; Bryn, Klaus; Hellebust, Halldis; and Solbakken, Magne, 6,331,289, Cl. 424-9.520.

Hohner, Gerd: *See*—
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Holbrook, Mark: *See*—
Carr, Kathryn; Holbrook, Mark; and Ferguson, Ian, 6,331,204, Cl. 106-31.270.

Holce, Kent; Morey, Frank; Rupert, Matt; and Bowman, Mark, to Veris Industries, Inc. Combination current sensor and relay. 6,331,821, Cl. 340-635.000.

Holland Industriele Diamantwerken B.V.: *See*—
Witters, Gilbert Filipe Maria; Van Vliet, Johannes Petrus; and Muller, Joop Henk, 6,331,138, Cl. 451-340.000.

Holle, Axel. Three dimension body movement device. 6,331,152, Cl. 482-4.000.

Hollmann, Thomas: *See*—
Hirtz, Gangolf; Hollmann, Thomas; Rothermel, Albrecht; and Schweer, Rainer, 6,331,875, Cl. 348-497.000.

Holmes, William E.: *See*—
Cabilly, Shmuel; Heyneker, Herbert L.; Holmes, William E.; Riggs, Arthur D.; and Wetzel, Ronald B., 6,331,415, Cl. 435-69.600.

Holt, Clayton Walter: *See*—
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Holzner, Peter: *See*—
Harth, Arno; Tippmann-Krayer, Petra; Holzner, Peter; Korte, Werner; Schrodi, Karl; and Klug, Andreas, 6,331,981, Cl. 370-395.100.

Hom, Bo; O'Neal, Sean P.; and Wahl, Rick W., to Dell USA, L.P. AC adapter for a module bay in a computer system. 6,331,936, Cl. 361-686.000.

Hon, Hai Precision Ind. Co., Ltd.: *See*—
Lin, Wan-Cheng, 6,331,940, Cl. 361-785.000.
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Honda, Atsuhito: *See*—
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Honda Giken Kogya Kabushiki Kaisha: *See*—
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Honda Giken Kogyo Kabushiki Kaisha: *See*—
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Morohoshi, Shinichi; and Tsuru, Ryuji, 6,331,740, Cl. 290-1.00A.
Sato, Morio; and Ohuchi, Katsuhiro, 6,331,822, Cl. 340-825.070.
Sekiya, Shigenobu; Matsuo, Hiroyuki; Takahashi, Keiichi; and Arai, Yasunori, 6,330,928, Cl. 180-242.000.
Shingyoji, Masahito; and Takeuchi, Nobuyoshi, 6,331,806, Cl. 333-33.000.
Yoshiki, Koichi; and Tsujii, Keiji, 6,330,869, Cl. 123-90.150.

Honda, Michitaka, to Kabushiki Kaisha Toshiba. Radiographic diagnosis apparatus, radiographic diagnosis method, plate member, and position detecting method. 6,332,015, Cl. 378-98.110.

Hone, George Dean; West, Glen Orval; and Beazer, Eric Peter, to FMC Corporation. Gangway system. 6,330,726, Cl. 14-71.500.

Honeycutt, Jeffrey; and Sharan, Sujit, to Micron Technology, Inc. Method of VLSI contact, trench, and via filling using a germanium underlayer with metallization. 6,331,482, Cl. 438-642.000.

Honeywell International Inc.: *See*—
DeCristofaro, Nicholas John; and Stamatis, Peter Joseph, 6,331,363, Cl. 428-692.000.
Kardokus, Janine K.; Wu, Chi tse; Parfeniuk, Christopher L.; and Buehler, Jane E., 6,331,234, Cl. 204-298.130.
Turner, Stephen P., 6,331,233, Cl. 204-298.130.

Hong, Seung-Min: *See*—
Park, Jong-Myung; Choi, Chang-Ho; Oh, Jung-Kwon; and Hong, Seung-Min, 6,331,598, Cl. 526-87.000.
Hong, Soongil, to Dongil Technology Ltd. Driving circuit of a piezo-ceramic transformer capable of controlling an input voltage and a dimming control method thereof. 6,331,748, Cl. 310-318.000.
Hong, Sung Ho: *See*—
Hermans, Michael Alan; Burazin, Mark Alan; Hada, Frank Stephen; and Hong, Sung Ho, 6,331,230, Cl. 162-207.000.
Hopkins, Doyle W.: *See*—
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Hopkins, Randall K.; and Hansson, Thomas W., to Hottinger Baldwin Measurements, Inc. Tank weigh module with excess motion restraint. 6,331,682, Cl. 177-154.000.
Hopper, Teresa B.: *See*—
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Hori, Haruo: *See*—
Kuroda, Yoichi; Naito, Yasuyuki; Hori, Haruo; Kondo, Takanori; and Asakura, Kyoshin, 6,331,930, Cl. 361-306.300.
Hori, Toshikazu; Paillet, Guy; and Woo, Jeffrey M. Parallel associative learning memory for a standalone hardwired recognition system. 6,332,137, Cl. 706-15.000.
Hori, Yasuhiro; Tsurumi, Yasuhisa; Takase, Shigehiro; Hatanaka, Hiroshi; Sakamoto, Kazutoshi; Hashimoto, Seiji; Ohki, Hidenori; Tojo, Takashi; Matsuda, Keiji; and Kawabata, Kohji, to Fujisawa Pharmaceutical Co., Ltd. Echinocandine derivatives with antimicrobial activity. 6,331,521, Cl. 514-9.000.
Horio, Yuma: *See*—
Inoue, Akihisa; Kimura, Hisamichi; and Horio, Yuma, 6,331,218, Cl. 148-561.000.
Horkans, W. Jean: *See*—
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Horn, Joseph F.: *See*—
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Horrobin, David Frederick, to Scotia Holdings PLC. Pharmaceutical preparation comprising eicosapentaenoic acid and/or stearidonic acid. 6,331,568, Cl. 514-560.000.
Horton, A. Michael, to United States Pipe and Foundry Company, Inc. Anodic encasement corrosion protection system for underground storage tanks, and metallic components thereof. 6,331,242, Cl. 205-724.000.
Horváth, Ervin: *See*—
Fahrig, Thomas; Gerlach, Irene; Horváth, Ervin; and Jork, Reinhard, 6,331,561, Cl. 514-456.000.
Hosie, Stanley; Chalmers, George; and Buchan, Robert, to ABB Vetco Gray, Inc. Automated dog-type riser make-up device and method of use. 6,330,918, Cl. 166-341.000.
Hosur, Srinath; Schmidl, Timothy M.; and Dabak, Anand G., to Texas Instruments Incorporated. User data indicator for discontinuous transmission. 6,331,975, Cl. 370-342.000.
Hotkowski, Peter D.; Todaro, Frank A.; Williams, Daniel J.; Burton, Peter C.; and Richardson, Brian C., to Asterisk, Inc. Splicer for joining thin sheets. 6,331,222, Cl. 156-157.000.
Hotta, Hiroyuki: *See*—
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Hottinger Baldwin Measurements, Inc.: *See*—
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Houghton, Alan: *See*—
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Houk, Talbott M.: *See*—
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House, Daniel E.; Porter, Eric L.; Smith, Robert M.; and Wheatley, Michael T., to International Business Machines Corporation. Method of, system for, and computer program product for providing a run time subsystem for run time libraries. 6,332,168, Cl. 709-331.000.
Howard, John Leroy, to Xerox Corporation. CRU/toner bottle connector assembly. 6,332,065, Cl. 399-106.000.
Howard, William H.: *See*—
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Hoxmeier, Ronald James, to Kraton Polymers U.S. LLC. Organic polymers containing polyethylene or polystyrene polysiloxane diblock copolymers as melt processing aids. 6,331,589, Cl. 525-54.300.
Hozumi, Hidetake: *See*—
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Hrubec, Thomas J.: *See*—
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Hsieh, Jiang, to General Electric Company. Methods and apparatus for tilted helical reconstruction multislice CT. 6,332,013, Cl. 378-15.000.
Hsieh, Peter Chang-Lin: *See*—
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Hsieh, Shyn-An: *See*—
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Hsieh, Shyn-Tsong; and Hsieh, Shyn-An, to SURECOM Technology Corporation. Structural and electrical connections for stacked computer devices. 6,331,938, Cl. 361-735.000.
Hsu, Jimmy Ming-Der: *See*—
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Hsu, Ken: *See*—
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Hsu, Tsung-Yuan: *See*—
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Hsu, Yi-Shou: *See*—
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Hu, Lawrence W.; Paul, David J.; Reis, Eugene Edward; and Green, Harry Leonard, II, to Cardiothoracic Systems, Inc. Surgical retractor apparatus for operating on the heart through an incision. 6,331,158, Cl. 600-232.000.
Hu, Mae W. L.: *See*—
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Huang, Aimin: *See*—
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Huang, Dehuan: *See*—
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Huang, Harry Z.: *See*—
Lence Barreiro, Juan A.; Huang, Harry Z.; Moon, Chouhwan; Freeland, Gary L.; and Mashiak, Robert H., 6,330,936, Cl. 187-393.000.
Huang, Hong-Yi, to Industrial Technology Research Institute. Charge-redistribution low-swing differential logic circuit. 6,331,791, Cl. 326-98.000.
Huang, Liren: *See*—
Domagala, John Michael; Ellsworth, Edmund Lee; Huang, Liren; Renau, Thomas Eric; Singh, Rajeshwar; and Stier, Michael Andrew, 6,331,538, Cl. 514-224.500.
Huang, Yonglin; and Xie, Ping, to New Focus, Inc. Optical polarization beam combiner/splitter. 6,331,913, Cl. 359-497.000.
Hubbard, Richard L. Prefabricated building wall structure. 6,330,775, Cl. 52-474.000.
Hubbard, S. Catherine: *See*—
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Hubbell, Jeffrey A.; and Schense, Jason, to California Institute of Technology. Enzyme-mediated modification of fibrin for tissue engineering. 6,331,422, Cl. 435-193.000.
Hueting, Raymond J. E.: *See*—
Brown, Adam R.; Hueting, Raymond J. E.; and Hurkx, Godefridus A. M., 6,331,467, Cl. 438-270.000.
Huff, Jürgen; Steuerle, Ulrich; Meixner, Hubert; Ehle, Beate; Paulus, Wolfgang; Lux, Jürgen Alfred; and Häussling, Lukas, to BASF Aktiengesellschaft. Detergency boosters for detergents. 6,331,519, Cl. 510-475.000.
Hufford, Michael M.: *See*—
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Hughes Electronics Corporation: *See*—
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Liu, Yong; Wu, Yeong-Wei Andy; and Li, Rongsheng, 6,330,988, Cl. 244-164.000.
Loo, Robert Y.; Schmitz, Adele; Brown, Julia; Foschaar, James; Hyman, Daniel J.; and Hsu, Tsung-Yuan, 6,331,257, Cl. 216-13.000.
Zhao, Wei; Arnold, Steven; Noerpel, Anthony; and Roos, Dave, 6,332,069, Cl. 455-12.100.
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Hume, Garrard: *See*—
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Hume, Robert: *See*—
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Humlicek, Donald R., to LSI Logic Corporation. N-way raid 1 on M drives block mapping. 6,332,177, Cl. 711-114.000.
Hung, Mien-Chie; Yan, Duen-Hwa; Wen, Yong; and Spohn, Bill, to Board of Regents, The University of Texas System. P202 is a tumor suppressor. 6,331,284, Cl. 424-1.110.
Hunter Douglas Industries BV: *See*—
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Hurkx, Godefridus A. M.: *See*—
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Hussain, Zahid S.; and Millet, Timothy J., to Silicon Graphics, Incorporated. Packetized command interface to a graphics processor. 6,331,857, Cl. 345-522.000.

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Hwang, Ho-woong: *See—*
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Hwang, In-seak: *See—*
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Hyman, Daniel J.: *See—*
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Hypertension Diagnostics, Inc: *See—*
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Hypres, Inc.: *See—*
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Hyuga, Makoto. Method and apparatus for taking visual images. 6,331,872, Cl. 348-207.000.

Hyundai Electronics Industries Co., Ltd.: *See—*
Kim, Seong-Ryeol, 6,331,802, Cl. 330-133.000.
Kim, Tae-Hoon; Kim, Jae-Hoon; and Uhr, Joon-Sun, 6,332,079, Cl. 455-446.000.
Lee, Duck Myung, 6,332,000, Cl. 375-232.000.

Hyundai Motor Company: *See—*
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i2 Technologies US, Inc.: *See—*
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Ibsen, Robert L.: *See—*
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Ida, Koji: *See—*
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Ihshii, Toshio: *See—*
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Iijima, Atsushi; and Sasaki, Yoshitaka, to TDK Corporation. Thin film magnetic head and method of manufacturing the same. 6,330,743, Cl. 29-603.140.

Iijima, Sumio: *See—*
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Iizuka, Toshimi: *See—*
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Ikeda, Hayato: *See—*
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Shimazu, Satoshi; Sugitani, Hiroshi; Masuda, Kazuaki; Ikeda, Masami; Ishinaga, Hiroyuki; Kashino, Toshio; Kubota, Masahiko; Yoshihira, Aya; and Kudo, Kiyomitsu, 6,331,043, Cl. 347-48.000.

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Ilgar, Ersan, to USX Corporation. Method of making chromium-plated steel. 6,331,241, Cl. 205-283.000.

Iljin Nanotech Co., Ltd.: *See—*
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Illa International LLC: *See—*
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Imaging Diagnostic Systems, Inc.: *See—*
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Imai, Akio: *See—*
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Imai, Genji: *See—*
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Imashiro, Yasuo; Tomita, Hideshi; Itoh, Takahiko; and Nakamura, Norimasa, to Nisshinbo Industries, Inc. LCP bonding method. 6,331,226, Cl. 156-330.000.

Immune Response Corporation, The: *See—*
Chiou, Henry C.; and Carlo, Dennis J., 6,331,525, Cl. 514-44.000.

Immunomedics, Inc.: *See—*
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Imperial College of Science, Technology, and Medicine: *See—*
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Imura, Yoshio: *See—*
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Ina Wälzlager Schaeffler OHG: *See—*
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Inamoto, Tadayoshi: *See—*
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Industrial Technology Research Institute: *See—*
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Lin, Wen-Chang; and Su, Yu T., 6,331,998, Cl. 375-143.000.

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Choi, Oong; and Ingle, Fred E., 6,331,013, Cl. 280-647.000.

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Innogenetics N.V.: *See—*
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Innovative Product Achievements, Inc.: *See—*
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Inomata, Norio: *See—*
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Inoue, Akihisa; Kimura, Hisamichi; and Horio, Yuma, to Masumoto, Tsuyoshi; and Inoue, Akihisa. High strength and high rigidity aluminum-based alloy and production method therefor. 6,331,218, Cl. 148-561.000.

Inoue, Fumio: *See—*
Yusa, Masami; Kato, Toshihiko; Inoue, Fumio; and Ichimura, Shigeki, 6,331,729, Cl. 257-678.000.

Inoue, Hidekazu: *See—*

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Inoue, Masaomi; Sato, Osamu; and Adachi, Michio, to Denso Corporation. Variable valve timing control system. 6,330,870, Cl. 123-90.170.
Inoue, Satoru, to Sony Corporation. Magnetic recording medium. 6,331,342, Cl. 428-141.000.
Inoue, Yuji: *See*—
Makita, Hidehisa; Mimura, Toshihiko; Mori, Masahiro; Inoue, Yuji; Shiomi, Satoru; Komori, Ayako; Nagao, Yoshitaka; Sasaoka, Makoto; and Itoyama, Shigenori, 6,331,671, Cl. 136-244.000.
Insitut National de la Sante et de la Reicherche Medicale (Inserm): *See*—
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International Business Machines Corporation: *See*—
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Angelopoulos, Marie; Dimitrakopoulos, Christos Dimitrios; Furman, Bruce Kenneth; Graham, Teresita Ordonez; and Lien, Shui-Chih Alan, 6,331,356, Cl. 428-411.100.
Baglin, John Edward Eric; Kellock, Andrew John; Terris, Bruce David; Weller, Dieter Klaus; and Folks, Liesl, 6,331,364, Cl. 428-694.00T.
Bandera, Daniel Quinto; Bregman, Mark F.; Gopal, Ajei S.; and Singhal, Sandeep, 6,332,127, Cl. 705-14.000.
Baskey, Michael E.; Brice, Frank W.; Glassen, Steven G.; Heffleron, Eugene P.; Ratcliff, Bruce H.; Stagg, Arthur J.; and Valley, Stephen R., 6,332,171, Cl. 710-39.000.
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Meth, Kalman Zvi; and Agbaria, Adnan M., 6,332,200, Cl. 714-16.000.
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International Fuel Cells LLC: *See*—
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Intuitive Surgical, Inc.: *See*—
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Iowa State University Research Foundation, Inc.: *See*—
Aylott, Jonathan W.; Chen-Esterlit, Zoe; Friedl, Jon H.; Kopelman, Raoul; Savvateev, Vadim N.; and Shinar, Joseph, 6,331,438, Cl. 436-172.000.
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Ireland, Philip J.; Glass, Thomas R.; and Sandhu, Gurtej, to Micron Technology, Inc. Photo-lithography process using multiple anti-reflective coatings. 6,331,379, Cl. 430-314.000.
Irie, Yuichiro; Shimizu, Takeo; and Ozawa, Shoichi, to Furukawa Electric Co. Ltd., The. Optical fiber. 6,332,053, Cl. 385-123.000.
Irwin, Richard A.: *See*—
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Ishii, Atsujiro; and Miyauchi, Yuji, to Olympus Optical Co., Ltd. Zoom lens system. 6,331,917, Cl. 359-687.000.
Ishii, Masami: *See*—
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Ishikawa, Yuichi: *See*—
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Shimazu, Satoshi; Sugitani, Hiroshi; Masuda, Kazuaki; Ikeda, Masami; Ishinaga, Hiroyuki; Kashino, Toshio; Kubota, Masahiko; Yoshihira, Aya; and Kudo, Kiyomitsu, 6,331,043, Cl. 347-48.000.
Ishiyama, Hitoshi: *See*—
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Ishizaki, Kimihide: *See*—
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Ishizuka, Hotaka; and Tachibana, Mitsuhiro, to Tokyo Electron Limited. Method of film-forming of tungsten. 6,331,483, Cl. 438-648.000.
ISIS Pharmaceuticals, Inc.: *See*—
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Isoue, Koichiro: *See*—
Tokuyasu, Jin; Isoue, Koichiro; Nagareda, Katsushi; and Onishi, Takashi, 6,331,650, Cl. 564-463.000.
Isozaki, Hisashi, to Kabushiki Kaisha Topcon. Method and apparatus for surface inspection. 6,331,888, Cl. 356-237.200.
Isozaki, Osamu: *See*—
Kojima, Daisuke; Imai, Genji; Akui, Jun; Kogure, Hideo; and Isozaki, Osamu, 6,331,376, Cl. 430-284.100.
Isozaki, Toshio: *See*—
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ISP Investments Inc.: *See*—
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Itadani, Motoaki: *See*—
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Iteya, Yoshihide, to Shimano, Inc. Mounting device for bicycle component. 6,331,089, Cl. 403-56.000.
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Satoyoshi, Tsutomu; Amano, Kenji; Ito, Hiromichi; and Miyazaki, Yoshito, 6,331,754, Cl. 315-111.510.
Ito, Hisao: *See*—
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Ito, Kensei: *See*—
Inoue, Katsuo; Tsukada, Tomoaki; Ito, Kensei; and Okamoto, Satoshi, 6,332,024, Cl. 379-433.060.
Ito, Kohei; Otani, Hideaki; Ota, Tomoko; and Kondou, Sakae, to Sharp Kabushiki Kaisha. Microwave heating apparatus requiring reduced power in a standby state. 6,331,699, Cl. 219-715.000.
Ito, Makoto, to Denso Corporation. Caulking method. 6,330,739, Cl. 29-513.000.
Ito, Osamu: *See*—
Sato, Yoshinori; Suzuki, Katuo; Ito, Osamu; and Tokairin, Yoshiichi, 6,331,965, Cl. 368-10.000.
Ito, Toshiharu, to NEC Corporation. Dispersion compensation apparatus. 6,332,054, Cl. 385-123.000.
Ito, Yoshihiro: *See*—
Hasegawa, Tatsuya; Ohkubo, Masaichi; Ito, Yoshihiro; and Tokunaga, Sanae, 6,331,883, Cl. 349-152.000.
Itoh, Atsushi: *See*—
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Itoh, Takahiko: *See*—
Imashiro, Yasuo; Tomita, Hideshi; Itoh, Takahiko; and Nakamura, Norimasa, 6,331,226, Cl. 156-330.000.
Itoh, Yasushi: *See*—
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Kato, Shigekazu; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, 6,330,756, Cl. 34-406.000.
Itoyama, Shigenori: *See*—
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Itzel, Gary Michael: *See*—
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Iversen, Alan M.: *See*—
Blakelock, Thomas R.; Butman, Thomas R., Jr.; and Iversen, Alan M., 6,331,745, Cl. 310-214.000.
Iverson, Timothy J., to Cisco Technology, Inc. Method and system for virtual memory compression in an embedded system. 6,332,172, Cl. 710-68.000.
Iwai, Yasunori: *See*—
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Iwanaga, Yoshihisa: *See*—
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Iwane, Masaaki: *See*—
Nishida, Shoji; Yonehara, Takao; Sakaguchi, Kiyofumi; and Iwane, Masaaki, 6,331,208, Cl. 117-89.000.
Iwasaki, Osamu; Otsuka, Naoji; Yano, Kentaro; Takahashi, Kiichiro; and Kanematsu, Daigoro, to Canon Kabushiki Kaisha. Ink jet recording apparatus and method with modulatable driving pulse width. 6,331,039, Cl. 347-11.000.
Ixsys, Inc.: *See*—
Glaser, Scott M.; Huse, William D.; and MacConnell, William P., 6,331,431, Cl. 435-261.000.
Izui, Hiroshi: *See*—
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J&R Engineering Company, Inc.: *See*—
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J.W. Pet Company: *See*—
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Ja-Ru, Inc.: *See*—
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Jackson, Larry A.: *See*—
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Jackson, Susan A.; and Eull, Martin L., to Wagner Spray Tech Corporation. Faux finish applicator. 6,330,731, Cl. 15-230.110.
Jackson, Susan A.; and Eull, Martin L., to Wagner Spray Tech Corporation. Faux finish method. 6,331,327, Cl. 427-260.000.
Jacobson, Loren A.: *See*—
Sandoval, David Lynn; and Jacobson, Loren A., 6,330,830, Cl. 73-856.000.
Jadav, Divyesh; Kenchammana-Hosekote, Deepak R.; and Menon, Jaishankar Moothedath, to International Business Machines Corp. System for updating data in a multi-adaptor environment. 6,332,197, Cl. 714-6.000.
Jaensch, Sven: *See*—
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Jain, Ajay, to AT&T Corp. System for recipient control of E-mail message by sending complete version of message only with confirmation from recipient to receive message. 6,332,164, Cl. 709-235.000.
Jain, Sulekh Chand, to Materials and Manufacturing Technologies Solutions Company. Lubrication system for metalforming. 6,330,818, Cl. 72-42.000.
Jaisimha, Namratha Rajasekharaiah: *See*—
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Jäkärä , Jukka; Aksela, Reijo; Parén, Aarto; and Renvall, Ilkka, to Kemira Chemicals Oy. Bleaching of chemical pulp and treatment with a chelating agent. 6,331,192, Cl. 8-109.000.
Jakobsen, James W.; Crespo, Carlito; and Hayes, Thomas, to Varn Products Company, Inc. Method for activating a dampening apparatus. 6,330,859, Cl. 101-484.000.
Jakobsson, Bertil, to Scania CV Aktiebolag (publ). Beam arrangement. 6,330,778, Cl. 52-729.100.
James, Everett B., Jr.: *See*—
McCormick, Gerald D.; and James, Everett B., Jr., 6,330,840, Cl. 81-57.300.
James, Jeffrey Scott: *See*—
Jebens, John H.; James, Jeffrey Scott; and Carlson, Lowell D., 6,332,146, Cl. 707-104.000.
Jandrell, Louis H. M., to Fast Location.Net, LLC. Method and apparatus for rapidly estimating the doppler-error and other receiver frequency errors of global positioning system satellite signals weakened by obstructions in the signal path. 6,331,836, Cl. 342-357.120.
Jang, Jin; and Chung, Suk-jae, to Jang, Jin; and Iljin Nanotech Co., Ltd. Method of forming carbon nanotubes. 6,331,209, Cl. 117-90.000.
Janjic, Nebojsa: *See*—
Ruckman, Judy; Gold, Larry; Stephens, Andrew; and Janjic, Nebojsa, 6,331,394, Cl. 435-6.000.
Jansen, Hans-Willi: *See*—
Weichert, Andreas; Albus, Udo; and Jansen, Hans-Willi, 6,331,546, Cl. 514-260.000.
Janz, Siegfried; Lafontaine, Hughes; and Xu, Dan-Xia, to National Research Council of Canada. Phototonic device with strain-induced three dimensional growth morphology. 6,331,445, Cl. 438-57.000.
Japan Pionics Co., Ltd.: *See*—
Teru, Suehachi; Miyano, Yasusada; Akita, Noboru; Otsuka, Kenji; and Shimada, Takashi, 6,331,281, Cl. 423-237.000.
Jebens, John H.; James, Jeffrey Scott; and Carlson, Lowell D., to Marshall, O'Toole, Gerstein, Murray & Borun. Method and apparatus for storing and printing digital images. 6,332,146, Cl. 707-104.000.
Jendrix, Richard W., to General Electric Company. Method and apparatus for purging turbine wheel cavities. 6,331,097, Cl. 416-96.00R.
Jeng, Pei-Ren: *See*—
Liu, Wan-Yi; and Jeng, Pei-Ren, 6,331,472, Cl. 438-424.000.
Jenkins, Michael O.: *See*—
Ducaroir, Francois; Nakamura, Karl S.; and Jenkins, Michael O., 6,331,999, Cl. 375-226.000.
Jenkins, William M.; Merzenich, Michael M.; Miller, Steven L.; Peterson, Bret E.; and Tallal, Paula, to Scientific Learning Corp. Method for adaptive training of short term memory and auditory/visual discrimination within a computer game. 6,331,115, Cl. 434-169.000.

Jennings, Robert N., Jr.; Yang, Bing; Protter, Andrew A.; and Wang, Yu-Chang John, to Scios Inc. Hydrogel compositions for the controlled release administration of growth factors. 6,331,309, Cl. 424-422.000.

Jensen, Andrew W.: *See*—
Green, Michael W.; and Jensen, Andrew W., 6,332,195, Cl. 713-201.000.

Jensen, Jens-Peter: *See*—
Adler-Nissen, Jens; Jensen, Jens-Peter; and Dyhr, Einar, 6,331,323, Cl. 426-523.000.

Jensen, Ryan D.: *See*—
Carr, Brian W.; Handorf, Donald F.; Sporrer, Scott; Jensen, Ryan D.; Merfeld, Nick; and Mathis, Mark D., 6,330,767, Cl. 52-192.000.

Jerussi, Thomas P.; Senanayake, Chrisantha H.; and Fang, Qun K., to Sepracor, Inc. Methods of treating and preventing attention deficit disorders. 6,331,571, Cl. 514-646.000.

Jervis, James E.: *See*—
Kayan, Helmut L.; and Jervis, James E., 6,330,964, Cl. 227-176.100.

Jibiki, Yuichi: *See*—
Yoshikawa, Ryosuke; Jibiki, Yuichi; and Yasuda, Mitsuru, 6,330,738, Cl. 29-426.400.

Jin, Kathy Liuhui: *See*—
Olden, Marc; and Jin, Kathy Liuhui, 6,330,963, Cl. 227-152.000.

Jines, Carlos: *See*—
Gilliland, Patrick B.; Jines, Carlos; and Washburn, Theodore, 6,331,992, Cl. 372-50.000.

Jinno, Yasuo; Saito, Hideto; Tsukagoshi, Hideo; Iketani, Jun'ichi; Fujita, Tadao; Sawaide, Minoru; Inada, Yasuo; and Shimizu, Yoshihiko, to Nippon Steel Corporation. Structure for reinforcing concrete member and reinforcing method. 6,330,776, Cl. 52-649.100.

JLG Industries, Inc.: *See*—
Boeckman, Brian M.; and Mellott, Lex A., 6,330,933, Cl. 182-63.100.

Jobson, Edward: *See*—
Lundgren, Staffan; Jobson, Edward; Unosson, Anders; and Salomonsson, Per, 6,331,232, Cl. 204-265.000.

Joh. Winklhofer & Soehne GmbH und Co. KG: *See*—
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Johansson, Karl-Erik: *See*—
Hallén, Hans; and Johansson, Karl-Erik, 6,331,688, Cl. 219-73.210.

John, Chester Charles, Jr.: *See*—
Berry, Robert Francis; Hussain, Riaz Y.; John, Chester Charles, Jr.; Levine, Frank Eliot; and Urquhart, Robert John, 6,332,117, Cl. 702-187.000.

John Hopkins University School of Medicine, The: *See*—
Gearhart, John D.; and Shamblott, Michael Joseph, 6,331,406, Cl. 435-7.210.

Johns Manville International, Inc.: *See*—
Kajander, Richard Emil, 6,331,339, Cl. 428-114.000.
Taylor, Thomas J.; Bristol, Derek C.; and Nedwick, Paul, 6,331,350, Cl. 428-221.000.

Johnson, Christopher L.; Flondro, Daniel S.; and Schmeltz, Timothy J., to Motorola, Inc. Method and apparatus for detecting failures in a communication device BV signal metrics. 6,332,072, Cl. 455-277.100.

Johnson, Duane E.: *See*—
Scheule, Ronald K.; Bagley, Rebecca G.; Eastman, Simon J.; Cheng, Seng H.; Marshall, John; Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Chang, Chau-Dung; Hubbard, S. Catherine; Johnson, Duane E.; Maneval, Daniel C.; Shepard, H. Michael; and Gregory, Richard J., 6,331,524, Cl. 514-44.000.

Johnson, Gary R.: *See*—
Barkataki, Shan; Dousette, Patricia J.; Frederick, Dale F.; Harte, Stuart H.; and Johnson, Gary R., 6,332,210, Cl. 717-1.000.

Johnson, Karl S.: *See*—
Sheikh, Tahir Q.; Johnson, Karl S.; and Nguyen, Ken, 6,332,202, Cl. 714-39.000.

Johnson, Kurt W.: *See*—
Peirce, Roger L.; Rhoads, Bruce C.; Duncan, John; Loftesness, Scott J.; Johnson, Kurt W.; Dobbs, Mary K.; and Mayes, Dan, 6,332,126, Cl. 705-14.000.

Johnson, Paul, to General Electric Company. Ultrasonic examination of shroud weld from top of shroud flange ring. 6,332,011, Cl. 376-249.000.

Johnson, Paul A.; TenCate, James A.; Guyer, Robert A.; and Van Den Abeele, Koen E. A., to University of California, The Regents of the. Resonant nonlinear ultrasound spectroscopy. 6,330,827, Cl. 73-579.000.

Johnson, Steven Howard: *See*—
Cranford, Hayden Clavie, Jr.; Efferson, Joseph Ronald, Jr.; Gary, Theodore Allen; Johnson, Steven Howard; Kreielsheimer, Gregg; and Scheuer, Mark Edmund, 6,332,166, Cl. 709-250.000.

Johnston, James W.: *See*—
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Johnston, Roger L., to J&R Engineering Company, Inc. Hydraulic boom for gantry or the like. 6,330,951, Cl. 212-270.000.

Johnstone, Joel A: *See*—
Beck, Christopher Clemmett Macleod; Berke, Jonathan Michael; Johnstone, Joel A; Mitchell, Robin Marie; Powers, James Karl; Sidell, Mark Franklin; and Knuff, Charles Dazler, 6,332,154, Cl. 709-204.000.

Johoji, Hirofumi; and Kuwabara, Toshiyuki, to Sumitomo Chemical Limited., Co. Resin composition pellet. 6,331,593, Cl. 525-191.000.

Jones, Arthur C.: *See*—
Yerxa, Benjamin R.; Rideout, Janet L.; and Jones, Arthur C., 6,331,529, Cl. 514-47.000.

Jones, Christopher W.: *See*—
Tsuji, Katsuyuki; Jones, Christopher W.; and Davis, Mark E., 6,331,500, Cl. 502-63.000.

Jones, J. Howard. Method and apparatus for sorting and comparing linear configurations. 6,332,040, Cl. 382-197.000.

Jones, Michael L.: *See*—
Burbank, Fred H.; Jones, Michael L.; and Lubock, Paul, 6,331,166, Cl. 600-567.000.

Jones, Paul: *See*—
Davies, Richard Huw; Savill, Derek Guy; and Jones, Paul, 6,330,730, Cl. 15-167.100.

Joost, Louwagie: *See*—
Lieven, Stuyver; Joost, Louwagie; and Rudi, Rossau, 6,331,389, Cl. 435-5.000.

Jorasch, James A.: *See*—
Walker, Jay S.; Jorasch, James A.; and Sparico, Thomas M., 6,331,144, Cl. 463-20.000.
Walker, Jay S.; Tedesco, Daniel E.; and Jorasch, James A., 6,332,129, Cl. 705-26.000.

Jork, Reinhard: *See*—
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Joseph B. Willey: *See*—
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Joseph, Thomas Peter: *See*—
Manteiga, John Alan; Dykhuizen, Cornelius Harm; Joseph, Thomas Peter; Wilusz, Christopher James; Troup, Robert Eugene; Boger, Ethan; and Franceschelli, Anthony John, 6,330,985, Cl. 244-54.000.

Joyce, Michael J., to Albany International Corp. Multiaxial press fabric having shaped yarns. 6,331,341, Cl. 428-138.000.

Juengling, Werner, to Micron Technology, Inc. Semiconductor processing methods of forming devices on a substrate, forming device arrays on a substrate, forming conductive lines on a substrate, and forming capacitor arrays on a substrate, and integrated circuitry. 6,331,461, Cl. 438-253.000.

Juffermans, Casparus A. H.: *See*—
Dirksen, Peter; and Juffermans, Casparus A. H., 6,331,368, Cl. 430-5.000.

Jufuku, Yasunobu; Ueno, Makoto; Hirooka, Akihiko; Imai, Yasuo; and Furukubo, Tatsumi, to Toyota Jidosha Kabushiki Kaisha. Cylinder head-integrated cylinder block and process for manufacturing the same. 6,330,871, Cl. 123-193.300.

Juhola, Minna: *See*—
Kuusama, Juha; Juhola, Minna; and Laaksonen, Juha, 6,332,026, Cl. 381-17.000.

Julian, Chris A.: *See*—
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Julliard, Jacques: *See*—
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Jung, Hyung. Magnetic lifting apparatus. 6,331,810, Cl. 335-288.000.

KA PTY Ltd.: *See*—
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Kaas, Ron: *See*—
Gever, Eval; Hermoni, Nir; Bergman, Orit; Tayar, Gil; Reshef, Eilon; Gill, Doron; Feuerstein, Addy; Caneti, Yaron; Oppenheim, Roy; Etam, Eran; Shpeizer, Zohar; Borer, Yoav; Livine, Eyal; Kikin, Ruth; Zuckerman, Oren; and Kaas, Ron, 6,331,861, Cl. 345-629.000.

Kabra, Bhagwati P., to Alcon Universal Ltd. Pharmaceutical compositions containing a fluoroquinolone antibiotic drug and xanthan gum. 6,331,540, Cl. 514-230.200.

Kabushiki Kaisha Linear Circuit: *See*—
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Kabushiki Kaisha Meidensha: *See*—
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Kabushiki Kaisha Miyake Design Jimusho: *See*—
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Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
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Kabushiki Kaisha Topcon: *See*—
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Kabushiki Kaisha Toshiba: *See*—
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Hasegawa, Tatsuya; Ohkubo, Masaichi; Ito, Yoshihiro; and Tokunaga, Sanae, 6,331,883, Cl. 349-152.000.
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Nakajima, Hiroomi; and Sakamoto, Toshihiro, 6,331,727, Cl. 257-587.000.
Okumura, Haruhiko; Kinno, Akira; Fujiwara, Hisao; Itoh, Goh; and Kamiura, Norihiko, 6,331,844, Cl. 345-87.000.
Okumura, Katsuya, 6,331,681, Cl. 174-267.000.
Onoda, Akihiro; and Iwai, Yasunori, 6,330,789, Cl. 60-39.030.

Shibata, Noboru; Tanaka, Tomoharu; Nakai, Hiroto; Yamamura, Toshio; and Fujimura, Susumu, 6,331,945, Cl. 365-185.030.
Takahashi, Toshinari; and Nogami, Hiroyasu, 6,332,025, Cl. 380-281.000.
Yamamoto, Hajime; Tanaka, Shigeru; Shigeta, Masaaki; Mizutani, Mami; Monden, Yukitaka; and Uchino, Hiroshi, 6,331,765, Cl. 323-210.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
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Kabushiki Kaisha Yaskawa Denki: *See*—
Shiraishi, Kazunari; Wakisako, Hitoshi; Maruyama, Yoshinaga; Yano, Kyoji; and Nakashima, Moriyuki, 6,331,887, Cl. 356-3.030.

Kadoi, Yasunori; Ota, Tsuyoshi; Isozaki, Toshio; Katayama, Kiyokazu; and Sadashima, Takanori, to Idemitsu Petrochemical Co., Ltd. Solid catalyst components for olefin polymerization, catalysts for olefin polymerization and process for producing olefin polymers. 6,331,620, Cl. 536-213.000.

Kagawa, Masaki: *See*—
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Kageyama, Keisuke: *See*—
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Kagoshima, Takehiko; and Akamine, Masami, to Kabushiki Kaisha Toshiba. Speech synthesis method. 6,332,121, Cl. 704-262.000.

Kaizik, Alfred; Scholz, Bernhard; Toetsch, Walter; Bueschken, Wilfried; and Nierlich, Franz, to Oxeno Olefinchemie GmbH. Process for preparing higher oxo alcohols from olefin mixtures by two-stage hydroformylation. 6,331,657, Cl. 568-882.000.

Kajander, Richard Emil, to Johns Manville International, Inc. Wood laminate and method of making. 6,331,339, Cl. 428-114.000.

Kakii, Toshiaki: *See*—
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Kakuda, Shinichi: *See*—
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Kalinoski, John P.; and Bunyan, Michael H., to Parker-Hannifin Corporation. Form-in-place EMI gaskets. 6,331,349, Cl. 428-220.000.

Kallender, Howard: *See*—
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Kalpakjian, Kent M.; and Porter, John D., to Micron Technology. Frequency sensing NMOS voltage regulator. 6,331,766, Cl. 323-268.000.

Kalsi, Avtar, to Teleflex Incorporated. Pedal assembly with non-contact pedal position sensor for generating a control signal. 6,330,838, Cl. 74-514.000.

Kamada, Hiroshi: *See*—
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Kamada, Kazuo; Koyama, Shoichi; Asahi, Nobuyuki; Suzuki, Toshiyuki; Shiohama, Eiji; Sugimoto, Masaru; Yamamoto, Shohei; Hashizume, Jiro; Akiniwa, Taishi; and Tanaka, Takashi, to Matsushita Electric Works, Ltd. LED luminaire with light control means. 6,331,063, Cl. 362-237.000.

Kamata, Kazuo; and Kamata, Mitsuro, to Fuji Photo Film Co., Ltd. Lens-fitted photo film unit and method of producing photographic print. 6,332,059, Cl. 396-6.000.

Kamata, Mitsuro: *See*—
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Kamdar, Jay: *See*—
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Kamei, Seiji: *See*—
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Kamei, Tomoe: *See*—
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Kamiura, Norihiko: *See*—
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Kanda, Koichiro: *See*—
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Kanefusa Kabushiki Kaisha: *See*—
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Kaneko, Kikuzo; Masuda, Takayuki; Matsuda, Fumihiko; Sato, Kohei; and Tanikawa, Kouji, to Organo Corporation. Method and equipment for chromatographic separation. 6,331,250, Cl. 210-635.000.

Kaneko, Masahide; Koike, Atsushi; Hatori, Yoshinori; Yamamoto, Seiichi; and Higuchi, Norio, to Kokusai Denshin Denwa Kabushiki Kaisha. Mouth shape synthesizing. 6,332,123, Cl. 704-276.000.

Kaneko, Masakatsu; and Aoki, Shinji, to Honda Giken Kogya Kabushiki Kaisha. Off-line teaching method for correcting robot model by revising teaching data on basis of difference between actual and target position. 6,332,101, Cl. 700-245.000.

Kaneko, Ryoichi: *See*—
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Kaneko, Takao: *See*—
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Kaneko, Tomihisa: *See*—
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Kaneko, Toshikazu; and Nishimoto, Masakazu, to Mega Chips Corporation. Information communication system. 6,332,139, Cl. 707-6.000.

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Kang, Dae Woo. Method of blasting using air tubes charged in a blasthole. 6,330,860, Cl. 102-313.000.

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Kano, Hiroyuki, to Canare Electric Co., Ltd. Variable capacity device with quantum-wave interference layers. 6,331,716, Cl. 257-14.000.

Kansai Electric Power Co., Inc., The: *See*—
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Kansai Paint Co., Ltd.: *See*—
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Kao Corporation: *See*—
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Kardokus, Janine K.; Wu, Chi tse; Parfeniuk, Christopher L.; and Buehler, Jane E., to Honeywell International Inc. Copper sputtering target assembly and method of making same. 6,331,234, Cl. 204-298.130.

Karita, Seiichiro: *See*—
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Karlsson, Kent; and Kechele, Karl, to AOA Apparatebau Gauting GmbH. Vacuum toilet system for a vehicle. 6,330,725, Cl. 4-431.000.

Karolinska Innovations AB: *See*—
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Kasai, Takamichi; and Kasai, Nozomi, to Kabushiki Kaisha Toshiba. Error correcting circuit for making efficient error correction, and involatile semiconductor memory device incorporating the same error correcting circuit. 6,331,948, Cl. 365-185.090.

Kasaoka, Tatsuo; Hachisuka, Atsushi; and Soeda, Shinya, to Mitsubishi Denki Kabushiki Kaisha. Manufacturing method of a semiconductor device for desired circuit patterns. 6,331,462, Cl. 438-253.000.

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Shimazu, Satoshi; Sugitani, Hiroshi; Masuda, Kazuaki; Ikeda, Masami; Ishinaga, Hiroyuki; Kashino, Toshio; Kubota, Masahiko; Yoshihira, Aya; and Kudo, Kiyomitsu, 6,331,043, Cl. 347-48.000.

Kasibhatla, Sastry L. A.: *See*—

Wake, Robert H.; Grable, Richard J.; and Kasibhatla, Sastry L. A., 6,331,700, Cl. 250-208.100.

Kataoya, Ichiro; Mori, Takahiro; Yamada, Satoru; Shiotsuka, Hidenori; and Komori, Ayako, to Canon Kabushiki Kaisha. Solar cell module having a surface side covering material with a specific nonwoven glass fiber member. 6,331,673, Cl. 136-259.000.

Katayama, Ichiro; Watanabe, Yoshinobu; Nakajima, Yuichi; and Shinbo, Yoshiharu, to Union Tool Company. Automatic drill bit re-pointing apparatus and method. 6,331,133, Cl. 451-9.000.

Katayama, Kiyokazu: *See*—
Kadoi, Yasunori; Ota, Tsuyoshi; Isozaki, Toshio; Katayama, Kiyokazu; and Sadashima, Takanori, 6,331,620, Cl. 536-213.000.

Katayanagi, Jun: *See*—
Yoshino, Hiroshi; Katayanagi, Jun; Yanagi, Haruyuki; Sonoda, Shinya; and Asai, Yasuyuki, 6,331,002, Cl. 271-117.000.

Kato, Hitoshi: *See*—
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Kato, Minoru: *See*—
Miyamoto, Hidenori; Imura, Yoshio; Kato, Minoru; Ohishi, Sueyuki; Terui, Nobuhiko; and Amanuma, Tatsuo, 6,332,060, Cl. 396-55.000.

Kato, Nobuo, to Ajinomoto Co., Inc. Hexulose phosphate isomerase gene. 6,331,428, Cl. 435-233.000.

Kato, Shigekazu; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, to Hitachi, Ltd. Vacuum processing and operating method. 6,330,755, Cl. 34-406.000.

Kato, Shigekazu; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, to Hitachi, Ltd. Vacuum processing apparatus and operating method therefor. 6,330,756, Cl. 34-406.000.

Kato, Shinichi: *See*—
Tojyou, Tutomu; Shirai, Shoji; and Kato, Shinichi, 6,331,752, Cl. 313-441.000.

Kato, Shitashi: *See*—
Bando, Tatsuo; Kato, Shitashi; Okutomi, Hiroshi; and Toyoda, Kiyoshi, 6,332,039, Cl. 382-195.000.

Kato, Shuhei: *See*—
Van Hook, Timothy J.; Cheng, Howard H.; DeLaurier, Anthony P.; Gossett, Carroll P.; Moore, Robert J.; Shepard, Stephen J.; Anderson, Harold S.; Princen, John; Doughty, Jeffrey C.; Pooley, Nathan F.; Sheppard, Byron; Takeda, Genyo; and Kato, Shuhei, 6,331,856, Cl. 345-503.000.

Kato, Toshihiko: *See*—
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Kato, Tsuyoshi: *See*—
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Katou, Yasuyuki; and Matsuda, Kiyoshi, to Oki Data Corporation. Image recording device having a reversing section. 6,331,004, Cl. 271-301.000.

Katsuhara, Yutaka: *See*—
Narizuka, Satoru; and Katsuhara, Yutaka, 6,331,649, Cl. 564-384.000.

Katsuta, Hiroyuki; Ishii, Seiichi; Tomiya, Kanji; and Kodaka, Kenji, to Mitsui Chemicals, Inc. Process for preparing 2-alkyl-3-aminothiophene derivative and 3-aminothiophene derivative. 6,331,634, Cl. 548-200.000.

Katsuta, Hiroyuki; Ishii, Seiichi; Tomiya, Kanji; and Kodaka, Kenji, to Mitsui Chemicals, Inc. Process for preparing 2-alkyl-3-aminothiophene derivative and 3-aminothiophene derivative. 6,331,639, Cl. 549-69.000.

Katz, Lisa K: *See*—
Gwynn, Michael; Kallender, Howard; Katz, Lisa K; Sylvester, Daniel; Traini, Christopher M; and Warren, Richard Lloyd, 6,331,411, Cl. 435-69.100.

Kauffman, James R.; Mason, Andrew H.; and Harter, Paul K., Jr., to Compaq Information Technologies Group, L.P. Method and apparatus for communication in a multi-processor computer system. 6,332,180, Cl. 711-153.000.

Kaufman, Arie E.; Liang, Zhengrong; Wax, Mark R.; Wan, Ming; and Chen, Dongqing, to Research Foundation of State University of New York, The. System and method for performing a three-dimensional virtual segmentation and examination. 6,331,116, Cl. 434-262.000.

Kaufman, Leon: *See*—
Zhang, Weigno; Kaufman, Leon; and Avram, Hector, 6,332,088, Cl. 600-410.000.

Kaufman, Mark A.; and Oliveira, Fernando, to Sun Microsystems, Inc. Method and apparatus for paging data and attributes including an atomic attribute for digital data processor. 6,332,185, Cl. 711-209.000.

Kaupp, Ansgar, to Basler AG. Method for optically inspecting an intermediate layer of an at-least three-layer, large-area article. 6,331,889, Cl. 356-239.100.

Kauschke, Michael; and Turi, Mordechai, to First Quality Nonwovens, Inc. Nonwoven fabric with high CD elongation and method of making same. 6,331,268, Cl. 264-518.000.

Kauschke, Michael; and Turi, Mordechai, to First Quality Nonwovens, Inc. Nonwoven fabric with high CD elongation and method of making same. 6,331,345, Cl. 428-156.000.

Kawabata, Kazuaki: *See*—
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Kawabata, Kohji: *See*—
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Kawaguchi, Kouji: *See*—
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Kawahata, Ken: *See*—
Yamada, Yukimitsu; Kawahata, Ken; Hebiguchi, Hiroyuki; Fujiyoshi, Tatsumi; and Saito, Junichi, 6,331,862, Cl. 345-660.000.

Kawai, Takahiro, to Mitsubishi Denki Kabushiki Kaisha. Decoding device and method. 6,331,829, Cl. 341-94.000.

Kawakami, Satoshi, to Sony Corporation. Information reproduction apparatus and information reproduction method. 6,332,058, Cl. 386-111.000.

Kawakita, Tetsuo; Kuramasu, Keizaburo; and Ikuda, Shigeo, to Mausushita Electric Industrial Co., Ltd. Thin film transistor and producing method thereof. 6,331,476, Cl. 438-486.000.

Kawakubo, Masaharu; and Kaneko, Ryoichi, to Nikon Corporation. Exposure methods for overlaying one mask pattern on another. 6,331,369, Cl. 430-22.000.

Kawamae, Osamu: *See*—
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Kawamoto, Yugen: *See*—
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Kawamura, Koichi; and Oohashi, Hidekazu, to Fuji Photo Film Co., Ltd. Photosensitive lithographic form plate using an image-forming material. 6,331,375, Cl. 430-270.100.

Kawamura, Makoto; and Fujinami, Yasushi, to Sony Corporation. Data reproduction apparatus and data storage medium. 6,332,057, Cl. 386-95.000.

Kawasaki, Hiroyuki, to Kokochi Sangyo Co., Ltd. Signal conversion method and signal converters. 6,331,828, Cl. 341-83.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Tokuda, Katsuhiko, 6,330,927, Cl. 180-197.000.

Kawasaki, Kenji; Tanaka, Tetsuo; Morimoto, Yoshiaki; Nitta, Kunihisa; and Tanaka, Kimio, to Hitachi, Ltd. Method for creating browsing data of an information searching apparatus and method for searching information. 6,332,145, Cl. 707-104.000.

Kawasaki, Makoto; Ichikawa, Yasuhiko; and Ishii, Shuichi, to Kabushiki Kaisha Toshiba. Disk storage apparatus and power supply control method for the same. 6,332,196, Cl. 713-300.000.

Kawasaki Steel Corporation: *See*—
Toge, Tetsuo; Komatsubara, Michiro; Honda, Atsuhito; Sadahiro, Kenichi; and Senda, Kunihiro, 6,331,215, Cl. 148-111.000.
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Kayan, Helmut L.; and Jervis, James E., to General Surgical Innovations, Inc. Apparatus and method for surgical fastening. 6,330,964, Cl. 227-176.100.

KC Manufacturing Inc.: *See*—
McAllister, Ken, 6,330,754, Cl. 34-202.000.

Kechele, Karl: *See*—
Karlsson, Kent; and Kechele, Karl, 6,330,725, Cl. 4-431.000.

Kehne, Heinz; Willms, Lothar; Bauer, Klaus; Bieringer, Hermann; and Rosinger, Christopher, to Hoechst Schering AgrEvo GmbH. Disubstituted methylidene hydrazinophenyl sulfonylureas, process for their production and their use as herbicides and plant growth regulators. 6,331,506, Cl. 504-214.000.

Kelleher, Eugene W.: *See*—
Brugnara, Carlo; Halperin, Jose; Bellot, Emile M., Jr.; Froimowitz, Mark; Lombardy, Richard John; Clifford, John J.; Gao, Ying-Duo; Haidar, Reem M.; Kelleher, Eugene W.; Kher, Falguni M.; Moussa, Adel M.; Sachdeva, Yesh P.; Sun, Minghua; and Taft, Heather N., 6,331,564, Cl. 514-520.000.

Kellock, Andrew John: *See*—
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Kellogg Brown & Root, Inc.: *See*—
Moretta, Jon C.; and Subramanian, Murugesan, 6,331,245, Cl. 208-39.000.

Kelly, Kimberley Anne; and Yu, Roy, to International Business Machines Corporation. Column for module component. 6,331,731, Cl. 257-704.000.

Kelly, Peter Yates: *See*—
Mitchell, David John; and Kelly, Peter Yates, 6,331,595, Cl. 525-263.000.

Kemira Chemicals Oy: *See*—
Jäkärä , Jukka; Aksela, Reijo; Parén, Aarto; and Renvall, Ilkka, 6,331,192, Cl. 8-109.000.

Kenchammana-Hosekote, Deepak R.: *See*—
Jadav, Divyesh; Kenchammana-Hosekote, Deepak R.; and Menon, Jaishankar Moothedath, 6,332,197, Cl. 714-6.000.

Kendall, Robert M.; and Greenberg, Steven J., to Alzeta Corporation. Burner for operating gas turbines with minimal NO_x emissions. 6,330,791, Cl. 60-39.110.

Kengeri, Subramani; and Hingarh, Hemraj K., to Silicon Access Networks, Inc. DRAM based refresh-free ternary CAM. 6,331,961, Cl. 365-222.000.

Kennametal PC Inc.: *See—*
Montgomery, Robert H., Jr., 6,331,035, Cl. 299-106.000.
Kennedy, Timothy: *See—*
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Brunelli, Shon; Kennedy, Timothy; and Ludwig, Bryan, 6,331,213, Cl. 134-6.000.
Kern, Manfred, to Aventis CropScience GmbH. Method for controlling harmful organisms in crops of useful plants. 6,331,531, Cl. 514-93.000.
Kern, Rodney; Leppert, Dave; Schulte, Peter; Schwingle, James; and Shanahan, Dean, to Rite-Hite Holding Corporation. Translating door with disengageable seals. 6,330,763, Cl. 49-231.000.
Kessler, Günther, deceased: *See—*
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Kestrel Corporation: *See—*
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Key Knife, Inc.: *See—*
Carpenter, Charles T.; Bayly, Robert M.; and Stager, Bradley R., 6,330,895, Cl. 144-373.000.
Kezuka, Satoshi; and Sadakata, Takayuki, to Fujitsu Limited. Treatment process for fluorine-containing water. 6,331,256, Cl. 210-712.000.
Khachatoorian, Zareh; and Qiu, Jian Ping, to Olympia Group, Inc. Adjustable safety utility knife with easily removable blade holder. 6,330,749, Cl. 30-162.000.
Khammungkhune, Sak: *See—*
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Khan, Azhar H.; Stiefel, James G.; Collier, Zaitrarrio T.; and Lee, Benjamin J., to Cubus Corporation. Integrated document development method. 6,332,150, Cl. 707-526.000.
Khanapure, Subhash P.: *See—*
Garvey, David S.; de Tejada, Inigo Saenz; Earl, Richard A.; and Khanapure, Subhash P., 6,331,543, Cl. 514-250.000.
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Kher, Falguni M.: *See—*
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Khera, Brij: *See—*
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Kibby, Charles L., to Chevron U.S.A. Inc. Increased liquid sensitivity during fischer-tropsch synthesis by olefin incorporation. 6,331,573, Cl. 518-706.000.
Kidder, Joseph D.: *See—*
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Kieke, Michele: *See—*
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Kikuyama, Susumu: *See—*
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Kilmartin, Brian: *See—*
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Kim, Chang-oon; and Lee, Kyune-hee, to Samsung Electronics Co., Ltd. Thin-film transistor liquid crystal display devices that generate gray level voltages having reduced offset margins. 6,331,847, Cl. 345-100.000.
Kim, Jae-Hoon: *See—*
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Kim, Jaekook: *See—*
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Kim, Jai-young, to Samsung Electronics Co., Ltd. Amorphous alloy of light rare earth-transition metal and semi-metal, magneto-optical recording layer made of the alloy, and magneto-optical disk adopting the layer. 6,331,338, Cl. 428-64.300.
Kim, Seong-Ryeol, to Hyundai Electronics Industries Co., Ltd. Linear gain control amplifier. 6,331,802, Cl. 330-133.000.
Kim, Steven W., to Transvascular, Inc. Deformable scaffolding multicellular stent. 6,330,884, Cl. 128-898.000.
Kim, Tae-Hoon; Kim, Jae-Hoon; and Uhr, Joon-Sun, to Hyundai Electronics Industries Co., Ltd. Service area expansion method for mobile communication system and method of processing calls between service areas. 6,332,079, Cl. 455-446.000.
Kim, Young H.: *See—*
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Kim, Young-Tae: *See—*
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Kimura, Katsuhiko: *See—*
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Kimura, Makiko: *See—*
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Kimura, Mitsuteru, to Ricoh Company, Ltd. Thermal analyzer and a method of measuring with the same. 6,331,074, Cl. 374-10.000.
Kimura, Naoto, to NEC Corporation. Semiconductor device having a BGA structure. 6,331,738, Cl. 257-787.000.
Kinawi, Husam: *See—*
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King, Bobby J.: *See—*
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King, Robert Dean, to General Electric Company. Traction motor drive system. 6,331,365, Cl. 429-9.000.
King, Thomas P. Bedding plow featuring a center-cut disk assembly having resilient relief means. 6,330,922, Cl. 172-166.000.
Kingston, Samuel C: *See—*
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Kinzler, Kevin W., to Kinzler Construction Services, Inc. Insulated ceiling for metal buildings and method of installing same. 6,330,779, Cl. 52-742.130.
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Kisters, by Gerlinde Margarete, legal representative: *See—*
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Kisters, Friedrich; Nöfer, Reinhold; Kessler, Günther, deceased; Bichsel-Kessler, by Wiltrud Elfriede, legal representative; Kisters, by Gerlinde Margarete, legal representative; and Kessler-Wetzig, by Ingrid Hildegund, legal representative. Preparation for improving hair growth, the skin structure and/or nail regeneration. 6,331,569, Cl. 514-561.000.

Kitagawa, Kozo: *See*—
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Kitahara, Shun; Muramatsu, Fumimasa; and Umezawa, Shigeki, to NSK-Warner Kabushiki Kaisha. Wet friction material and process for producing the same. 6,331,358, Cl. 428-447.000.

Kitajima, Masaaki; Tsumura, Makoto; Mikami, Yoshiro; Funahata, Katsuyuki; Nagae, Yoshiharu; Wakui, Yoko; Saito, Ryuichi; Matsui, Makoto; and Nemoto, Fumiaki, to Hitachi, LTD; and Hitachi Haramachi Semiconductor, LTD. Liquid crystal display device and driving method therefor. 6,331,845, Cl. 345-88.000.

Kitamura, Toru; Suzuki, Norio; Kurokawa, Naohiro; and Ishiguro, Tetsuya, to Honda Giken Kogyo Kabushiki Kaisha. Evaporative emission control system for internal combustion engine. 6,330,879, Cl. 123-520.000.

Kitano, Makoto: *See*—
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Kizilyalli, Isik C.; Merchant, Sailesh M.; and Radosevich, Joseph R., to Agere Systems Guardian Corp. Method of fabricating a mom capacitor having a metal silicide barrier. 6,331,460, Cl. 438-243.000.

Kizu, Naoki: *See*—
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Klaassen, Klaassen Berend; and Van Peppen, Jacobus Cornelis Leonardus, to International Business Machines Corporation. Write head impedance termination in magnetic recording. 6,331,919, Cl. 360-46.000.

Klassen, David John; Whitney, Morgan Merritt, Jr.; Peterman, Thomas Randall; Pergande, Paul Earl; and Collins, David Robert, to Visteon Global Technologies, Inc. Multilayer electrical interconnection device and method of making same. 6,331,680, Cl. 174-261.000.

Klava, Stephen Andrew; and Bearak, Justin Blair, to U.S. Filter Corporation. Scotch yoke mechanism for secure track sliding. 6,330,835, Cl. 74-50.000.

Klaveness, Jo; Rongved, Pål; Høgset, Anders; Tolleshaug, Helge; Cuthbertson, Alan; Hoff, Lars; Bryn, Klaus; Hellebust, Halldis; and Solbakken, Magne, to Nycomed Imaging AS. Targeted diagnostic/therapeutic agents having more than one different vectors. 6,331,289, Cl. 424-9.520.

Klimach, Johann S.: *See*—
Graham, John; Raible, Robert B.; and Klimach, Johann S., 6,331,093, Cl. 408-1.00R.

Klimko, Peter G.; Hellberg, Mark R.; and Graff, Gustav, to Alcon Universal Ltd. 3-heteroatom substituted and two carbon homologs of 15-HETE and methods of use. 6,331,644, Cl. 554-219.000.

Klimko, Peter G.: *See*—
Conrow, Raymond E.; and Klimko, Peter G., 6,331,566, Cl. 514-549.000.

Klinksiek, Bernd; Mahiout, Said; Nothelle, Ricarda-Christine; Hamann, Hans-Jürgen; and Sdebik, Jürgen, to Bayer Aktiengesellschaft. Method and device for producing a parenteral medicament. 6,331,314, Cl. 424-450.000.

Kljavin, Ivar J.; and La Fleur, Monique, to Genentech, Inc. Method of enhancing the survival of retinal neurons and treating ocular diseases using FGF-5. 6,331,523, Cl. 514-12.000.

Klosterman, Larry G. Door window mounting and regulator assembly and method for assembly. 6,330,764, Cl. 49-375.000.

Kloti, Andreas S., to Paradigm Genetics, Inc. Modified full length promoters. 6,331,663, Cl. 800-278.000.

Klug, Andreas: *See*—
Harth, Arno; Tippmann-Krayer, Petra; Holzner, Peter; Korte, Werner; Schrodi, Karl; and Klug, Andreas, 6,331,981, Cl. 370-395.100.

Kluge-Paletta, Werner: *See*—
Szonn, Bodo; and Kluge-Paletta, Werner, 6,331,336, Cl. 428-40.100.

Klughart, Kevin: *See*—
Baillargeon, Paul D.; and Klughart, Kevin, 6,330,931, Cl. 182-18.000.

Knight, James E.: *See*—
Nelson, Douglas J.; Knight, James E.; and Noga, Mark C., 6,331,249, Cl. 210-610.000.

Knight Treatment Systems, Inc.: *See*—
Nelson, Douglas J.; Knight, James E.; and Noga, Mark C., 6,331,249, Cl. 210-610.000.

Knox, Keith T., to Xerox Corporation. Method and apparatus for stitching scanned image segments together to form an oversized document. 6,331,860, Cl. 345-620.000.

Knuff, Charles Dazler: *See*—
Beck, Christopher Clemmett Macleod; Berke, Jonathan Michael; Johnstone, Joel A; Mitchell, Robin Marie; Powers, James Karl; Sidell, Mark Franklin; and Knuff, Charles Dazler, 6,332,154, Cl. 709-204.000.

Knull, Craig: *See*—
Gillis, Ian; and Knull, Craig, 6,330,912, Cl. 166-177.400.

Ko, Soo S.; DeLucca, George V.; Duncia, John V.; Santella, Joseph B., III; and Gardner, Daniel S. N-ureidoalkyl-piperidines as modulators of chemokine receptor activity. 6,331,541, Cl. 514-237.200.

Ko, Soo S.; DeLucca, George V.; Duncia, John V.; Santella, Joseph B., III; and Wacker, Dean A. Heterocycyclic piperidines as modulators of chemokine receptor activity. 6,331,545, Cl. 514-253.010.

Ko, Yong-sun: *See*—
Lee, Keum-joo; Hwang, In-seak; Ko, Yong-sun; and Song, Chang-Iyoung, 6,331,478, Cl. 438-592.000.

Kobayashi, Fumiyuki; Kawabata, Kazuaki; Ueno, Yasushi; and Yoneda, Yasunobu, to Murata Manufacturing Co., Ltd. Monolithic ceramic capacitor. 6,331,932, Cl. 361-321.200.

Kobayashi, Isao, to Canon Kabushiki Kaisha. Photoelectric conversion device, manufacturing method thereof, and x-ray imaging system including the device. 6,332,016, Cl. 378-98.200.

Kobayashi, Mako; and Morishita, Fukashi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device including voltage down converter allowing tuning in short period of time and reduction of chip area. 6,331,962, Cl. 365-226.000.

Kobayashi, Nobuyuki: *See*—
Masazumi, Naoki; Kobayashi, Nobuyuki; Okada, Masakazu; Hashimoto, Kiyofumi; and Hatano, Takuji, 6,331,884, Cl. 349-156.000.

Kobayashi, Seiji; and Fujiki, Toshihiro, to Sony Corporation. For recording by modulating the width of pits in accordance with a predefined information stream. 6,331,969, Cl. 369-275.300.

Kobayashi, Takashi: *See*—
Hatae, Shinichi; and Kobayashi, Takashi, 6,332,159, Cl. 709-224.000.

Kobori, Masao: *See*—
Tanaka, Hitoshi; Kobori, Masao; and Tachibana, Ikuko, 6,332,203, Cl. 714-42.000.

Kobussen, Josinus Johannes Jacobus Petrus: *See*—
Kobussen, Petrus Johannes; Kobussen, Josinus Johannes Jacobus Petrus; Kobussen, Martinus Wilhelmus Hendricus; and Smulders, Hendricus Franciscus Gerardus, 6,331,104, Cl. 425-133.100.

Kobussen, Martinus Wilhelmus Hendricus: *See*—
Kobussen, Petrus Johannes; Kobussen, Josinus Johannes Jacobus Petrus; Kobussen, Martinus Wilhelmus Hendricus; and Smulders, Hendricus Franciscus Gerardus, 6,331,104, Cl. 425-133.100.

Kobussen, Petrus Johannes; Kobussen, Josinus Johannes Jacobus Petrus; Kobussen, Martinus Wilhelmus Hendricus; and Smulders, Hendricus Franciscus Gerardus, to Townsend Engineering Company. Continuous food processing system. 6,331,104, Cl. 425-133.100.

Koch, Benoit, to Solvay Pololefins Europe-Belcium. Copolymer of ethylene and of at least one alpha-olefin and method for obtaining same. 6,331,599, Cl. 526-106.000.

Koch, Robert, to Tokyo Electron Limited. Removal of polishing residue from substrate using supercritical fluid process. 6,331,487, Cl. 438-692.000.

Koch, Theodore Augur; Allgeier, Alan Martin; Harper, Mark Jay; and Sengupta, Sourav Kumar, to E.I. du Pont de Nemours and Company. Process for preparing 6-aminocaproamide. 6,331,624, Cl. 540-538.000.

Kodaka, Kenji: *See*—
Katsuta, Hiroyuki; Ishii, Seiichi; Tomiya, Kanji; and Kodaka, Kenji, 6,331,634, Cl. 548-200.000.
Katsuta, Hiroyuki; Ishii, Seiichi; Tomiya, Kanji; and Kodaka, Kenji, 6,331,639, Cl. 549-69.000.

Koezuka, Tetsuo: *See*—
Nakamura, Yutaka; Koezuka, Tetsuo; Komoriya, Hitoshi; and Hirahara, Takao, 6,331,891, Cl. 356-401.000.

Koga, Masaki; Suzuki, Nobutaka; Saitoh, Hitoshi; Oyamada, Kenshiro; Tokuhara, Koki; Mino, Shuji; Ishigaki, Naoyuki; and Yamamoto, Hitoshi, to Kabushiki Kaisha Meidensha; and Sumitomo Special Metals Co., LTD. Monolithically bonded construct of rare-earth magnet and metal material and method for bonding same. 6,331,214, Cl. 148-101.000.

Kogan, Timothy: *See*—
Chan, Ming Fai; Wu, Chengde; Raju, Bore Gowda; Kogan, Timothy; Kois, Adam; Verner, Erik Joel; Castillo, Rosario Silvestre; Yalamoori, Venkatachalapathi; and Balaji, Vitukudi Narayanaiyengar, 6,331,637, Cl. 548-241.000.

Kogure, Hideo: *See*—
Kojima, Daisuke; Imai, Genji; Akui, Jun; Kogure, Hideo; and Isozaki, Osamu, 6,331,376, Cl. 430-284.100.

Kohn, Leslie D.: *See*—
de Garrido, Diego P.; Uz, Kamil Metin; Kohn, Leslie D.; and LeGall, Didier, 6,331,874, Cl. 348-452.000.

Koike, Atsushi: *See*—
Kaneko, Masahide; Koike, Atsushi; Hatori, Yoshinori; Yamamoto, Seiichi; and Higuchi, Norio, 6,332,123, Cl. 704-276.000.

Koilpillai, R. David: *See*—
Rydbeck, Nils; Molnar, Barbara; Guey, Jiann-Ching; Khayrallah, Ali; and Koilpillai, R. David, 6,332,006, Cl. 375-262.000.

Kois, Adam: *See*—
Chan, Ming Fai; Wu, Chengde; Raju, Bore Gowda; Kogan, Timothy; Kois, Adam; Verner, Erik Joel; Castillo, Rosario Silvestre; Yalamoori, Venkatachalapathi; and Balaji, Vitukudi Narayanaiyengar, 6,331,637, Cl. 548-241.000.

Koizumi, Yutaka: *See*—
Tajima, Hiroki; Koizumi, Yutaka; Aono, Kiyomi; Abe, Tsutomu; Karita, Seiichiro; Okazaki, Takeshi; Omata, Kouichi; and Kubota, Masahiko, 6,331,051, Cl. 347-65.000.

Kojima, Daisuke; Imai, Genji; Akui, Jun; Kogure, Hideo; and Isozaki, Osamu, to Kansai Paint Co., Ltd. Organic-solvent-based photocurable resist composition and resist pattern-forming method. 6,331,376, Cl. 430-284.100.

Kokochi Sangyo Co., Ltd.: *See*—
Kawasaki, Hiroyuki, 6,331,828, Cl. 341-83.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Kaneko, Masahide; Koike, Atsushi; Hatori, Yoshinori; Yamamoto, Seiichi; and Higuchi, Norio, 6,332,123, Cl. 704-276.000.
Miyazaki, Tetsuya; Edagawa, Noboru; and Yamamoto, Shu, 6,331,907, Cl. 359-127.000.

Kokusai Electric Co., Ltd.: *See*—

Arayashiki, Akifumi; Oyamada, Ouichi; and Hirata, Shin-Ichi, 6,332,001, Cl. 375-240.000.
Kolb, Michael J.: *See*—
Lambert, Marco; and Kolb, Michael J., 6,330,747, Cl. 29-898.052.
Kolter, Karl: *See*—
Meffert, Helmut; Sanner, Axel; Berndl, Gunther; Ruchatz, Folker; Kolter, Karl; and Bauer, Kurt Heinz, 6,331,294, Cl. 424-78.030.
Komatsubara, Michiro: *See*—
Toge, Tetsuo; Komatsubara, Michiro; Honda, Atsuhito; Sadahiro, Kenichi; and Senda, Kunihiro, 6,331,215, Cl. 148-111.000.
Komine, Takaya: *See*—
Noguchi, Hajime; and Komine, Takaya, 6,331,340, Cl. 428-116.000.
Komori, Ayako: *See*—
Kataoya, Ichiro; Mori, Takahiro; Yamada, Satoru; Shiotsuka, Hidenori; and Komori, Ayako, 6,331,673, Cl. 136-259.000.
Makita, Hidehisa; Mimura, Toshihiko; Mori, Masahiro; Inoue, Yuji; Shiomi, Satoru; Komori, Ayako; Nagao, Yoshitaka; Sasaoka, Makoto; and Itoyama, Shigenori, 6,331,671, Cl. 136-244.000.
Komoriya, Hitoshi: *See*—
Nakamura, Yutaka; Koezuka, Tetsuo; Komoriya, Hitoshi; and Hirahara, Takao, 6,331,891, Cl. 356-401.000.
Kondo, Masami, to Yanmar Diesel Engine Co., Ltd. Hydraulic circuit for turning excavator. 6,330,797, Cl. 60-421.000.
Kondo, Takanori: *See*—
Kuroda, Yoichi; Naito, Yasuyuki; Hori, Haruo; Kondo, Takanori; and Asakura, Kyoshin, 6,331,930, Cl. 361-306.300.
Kondo, Tetsujiro; Fujimori, Yasuhiro; Carrig, James J.; and Ghosal, Sugata, to Sony Corporation; and Sony Electronics, Inc. Apparatus and method for encoding and decoding data in a lossy transmission environment. 6,332,042, Cl. 382-239.000.
Kondo, Yasuo; Sugiyama, Yasuhisa; and Tanaka, Norio, to Nissan Chemical Industries, Ltd. Process for the preparation of benzonitrile compounds. 6,331,628, Cl. 544-312.000.
Kondou, Sakae: *See*—
Ito, Kohei; Otani, Hideaki; Ota, Tomoko; and Kondou, Sakae, 6,331,699, Cl. 219-715.000.
Kone Corporation: *See*—
Systermans, Ralf, 6,330,935, Cl. 187-391.000.
Konezny, Ronald E.: *See*—
Ladner, David L.; Grazzini, Andrea J.; and Konezny, Ronald E., 6,331,825, Cl. 340-988.000.
Koninklijke Philips Electronics N.V. (KPENV): *See*—
Bass, Victor J.; and Vines, Landon, 6,331,136, Cl. 451-56.000.
Kono, Seiko: *See*—
Nishimura, Hirofumi; Kuji, Youichi; Kono, Seiko; Yamashita, Hiroyuki; and Araki, Keiji, 6,330,796, Cl. 60-286.000.
Konya, Minehiro: *See*—
Funayama, Ryuji; Konya, Minehiro; and Takezawa, Hajime, 6,332,038, Cl. 382-190.000.
Konya, Naoto; and Seko, Shinzo, to Sumitomo Chemical Company, Limited. Process for producing lycopene and intermediate thereof. 6,331,652, Cl. 568-9.000.
Kopelman, Raoul: *See*—
Aylott, Jonathan W.; Chen-Esterlit, Zoe; Friedl, Jon H.; Kopelman, Raoul; Savvateev, Vadim N.; and Shinar, Joseph, 6,331,438, Cl. 436-172.000.
Kordsmeyer, Martin, to Siemens Aktiengesellschaft. Process for controlling the establishment and operation of paths of transmission (bearers) in a wireless telecommunication system, in particular in a dect-specific RLL/WLL system bound into an ISDN-system as a local information transmission loop. 6,332,080, Cl. 455-450.000.
Korea Chemical Co., Ltd.: *See*—
Park, Jong-Myung; Choi, Chang-Ho; Oh, Jung-Kwon; and Hong, Seung-Min, 6,331,598, Cl. 526-87.000.
Koren, Eugen: *See*—
Cooper, David K. C.; and Koren, Eugen, 6,331,658, Cl. 800-14.000.
Korn, Peter A.: *See*—
Walker, William D.; and Korn, Peter A., 6,332,218, Cl. 717-11.000.
Korneluk, Robert G.; and Lagacé, Mark, to University of Ottawa. Methods and compounds for modulating male fertility. 6,331,412, Cl. 435-69.100.
Korte, Werner: *See*—
Harth, Arno; Tippmann-Krayer, Petra; Holzner, Peter; Korte, Werner; Schrodi, Karl; and Klug, Andreas, 6,331,981, Cl. 370-395.100.
Kortenbach, Juergen: *See*—
Turturro, Vincent; Francese, Jose L.; Gottlieb, Saul; and Kortenbach, Juergen, 6,331,165, Cl. 600-562.000.
Koster, James E.: *See*—
Orr, Christopher Henry; Luff, Craig Janson; Dockray, Thomas; Macarthur, Duncan Whittemore; Bounds, John Alan; and Koster, James E., 6,331,706, Cl. 250-385.100.
Koster, John; and Bosveld, Frank, to U.S. Philips Corporation. Method of updating software in a video receiver. 6,331,876, Cl. 348-725.000.
Kosugi, Yasuhiko: *See*—
Yonekubo, Shuji; and Kosugi, Yasuhiko, 6,331,040, Cl. 347-15.000.
Kotian, François: *See*—
Boutenko, Vladislav; Callier, Bernard; Hacquard, Huburt; and Kotian, François, 6,332,014, Cl. 378-95.000.
Kotobuki & Co., Ltd.: *See*—
Hattori, Katsuya; Nakamura, Akio; and Morishita, Mikio, 6,331,203, Cl. 106-31.130.
Kouhashi, Yasuo: *See*—
Ohashi, Masahiro; Hamada, Mana; Yonezawa, Tomonori; Kurohmaru, Shunichi; Kouhashi, Yasuo; Matsuo, Masatoshi; and Toujima, Masayoshi, 6,332,152, Cl. 708-490.000.
Kouwenberg, Robert J: *See*—
Kouwenberg, Tineke C; Kouwenberg, Robert J; Petersen, Soren; Wall, Michael T; Morgan, David L; and Loughnane, Cathal, 6,330,808, Cl. 62-372.000.
Kouwenberg, Tineke C; Kouwenberg, Robert J; Petersen, Soren; Wall, Michael T; Morgan, David L; and Loughnane, Cathal, to Tineke Charlotte Kouwenberg. Device for regulating the temperature of a container. 6,330,808, Cl. 62-372.000.
Kovalcin, David E.: *See*—
deVries, Arjen P.; Sokolov, Michael; Kovalcin, David E.; and Eberman, Brian, 6,332,144, Cl. 707-102.000.
Koveal, Russell J.: *See*—
Lapidus, Albert L'Vovoch; Krylova, Alla Jurievna; Daage, Michel A.; Koveal, Russell J.; and Fiato, Rocco A., 6,331,574, Cl. 518-709.000.
Koyama, Jun: *See*—
Yamazaki, Shunpei; Teramoto, Satoshi; Koyama, Jun; and Miyanaga, Akiharu, 6,331,475, Cl. 438-479.000.
Yamazaki, Shunpei; Koyama, Jun; and Ohtani, Hisashi, 6,331,718, Cl. 257-64.000.
Koyama, Shoichi: *See*—
Kamada, Kazuo; Koyama, Shoichi; Asahi, Nobuyuki; Suzuki, Toshiyuki; Shiohama, Eiji; Sugimoto, Masaru; Yamamoto, Shohei; Hashizume, Jiro; Akiniwa, Taishi; and Tanaka, Takashi, 6,331,063, Cl. 362-237.000.
Koyama, Shuji: *See*—
Nakata, Yoshie; Sugitani, Hiroshi; Inamoto, Tadayoshi; Kimura, Makiko; and Koyama, Shuji, 6,331,050, Cl. 347-65.000.
Krabacher, Kenneth W.: *See*—
Liu, Hsin-Tuan; Dickman, Robert B.; Krabacher, Kenneth W.; Steinmetz, Gregory T.; Beacher, Brent F.; and Doloresco, Bryan K., 6,331,100, Cl. 416-238.000.
Kranz, David M.: *See*—
Wittrup, K. Dane; Kranz, David M.; Kieke, Michele; and Boder, Eric T., 6,331,391, Cl. 435-6.000.
Kraton Polymers U.S. LLC: *See*—
Hoxmeier, Ronald James, 6,331,589, Cl. 525-54.300.
Krause, Lawrence Alan; and Scott, Kenneth Alan. Casino/lottery/sports styled wagers and games for parimutuel operation. 6,331,148, Cl. 473-274.000.
Krause, Volker; and Ullmann, Christoph. Diode laser, laser optics, device for laser treatment of a workpiece, process for a laser treatment of workpiece. 6,331,692, Cl. 219-121.730.
Kredo, Thomas J.: *See*—
Mitchell, Andrew J.; Bergman, Richard G.; and Kredo, Thomas J., 6,332,020, Cl. 379-93.250.
Kreielsheimer, Gregg: *See*—
Cranford, Hayden Clavie, Jr.; Efferson, Joseph Ronald, Jr.; Gary, Theodore Allen; Johnson, Steven Howard; Kreielsheimer, Gregg; and Scheuer, Mark Edmund, 6,332,166, Cl. 709-250.000.
Krempels, Alan C., to GAM Investments, L.L.C. Process for making and finishing a stamped part having colored, textured surface. 6,330,740, Cl. 29-527.400.
Krichever, Mark: *See*—
Bridgelall, Raj; Shepard, Howard; Barkan, Edward; Sanders, Robert; Maiman, Mitch; Dvorkis, Paul; Boriotti, Joseph; Krichever, Mark; Gurevich, Vladimir; and Breytman, Alexander, 6,330,973, Cl. 235-462.450.
Krogh, Michael L.: *See*—
Sampayan, Stephen E.; Krogh, Michael L.; Davis, Steven C.; Decker, Derek E.; Rosenblum, Ben Z.; Sanders, David M.; and Elizondo-Decanini, Juan M., 6,331,194, Cl. 29-25.030.
Krueger, Roy W.: *See*—
Young, C. David; Krueger, Roy W.; Becker, Michael S.; Harwell, Henry O.; and Stevens, James A., 6,331,973, Cl. 370-337.000.
Krutchinsky, Andrew N.; Loboda, Alexandre V.; Spicer, Victor L.; Ens, Werner; and Standing, Kenneth G., to University of Manitoba. Spectrometer provided with pulsed ion source and transmission device to damp ion motion and method of use. 6,331,702, Cl. 250-281.000.
Krylova, Alla Jurievna: *See*—
Lapidus, Albert L'Vovoch; Krylova, Alla Jurievna; Daage, Michel A.; Koveal, Russell J.; and Fiato, Rocco A., 6,331,574, Cl. 518-709.000.
Kubinski, Donald Chester: *See*—
Barker, Brandy Cyan; Kubinski, Donald Chester; Moffatt, Rodney Taylor; and Dyrlund, Christopher David, 6,330,984, Cl. 242-536.000.
Kubota, Akira: *See*—
Okazaki, Iwao; Nakamori, Yukari; Nakajima, Shozi; Kubota, Akira; and Shirakawa, Yuri, 6,331,344, Cl. 428-141.000.
Kubota, Masahiko: *See*—
Ozaki, Teruo; Ogawa, Masahiko; Ikeda, Masami; Saito, Ichiro; Yagi, Takayuki; Ishinaga, Hiroyuki; Kashino, Toshio; Hiroki, Tomoyuki; Imanaka, Yoshiyuki; Kubota, Masahiko; and Mochizuki, Muga, 6,331,259, Cl. 216-27.000.
Shimazu, Satoshi; Sugitani, Hiroshi; Masuda, Kazuaki; Ikeda, Masami; Ishinaga, Hiroyuki; Kashino, Toshio; Kubota, Masahiko; Yoshihira, Aya; and Kudo, Kiyomitsu, 6,331,043, Cl. 347-48.000.
Tajima, Hiroki; Koizumi, Yutaka; Aono, Kiyomi; Abe, Tsutomu; Karita, Seiichiro; Okazaki, Takeshi; Omata, Kouichi; and Kubota, Masahiko, 6,331,051, Cl. 347-65.000.
Kudo, Kiyomitsu: *See*—

Shimazu, Satoshi; Sugitani, Hiroshi; Masuda, Kazuaki; Ikeda, Masami; Ishinaga, Hiroyuki; Kashino, Toshio; Kubota, Masahiko; Yoshihira, Aya; and Kudo, Kiyomitsu, 6,331,043, Cl. 347-48.000.

Kudryashov, Alexis; Larichev, Andrey Viktorovich; and Otten, Leonard John, III, to Kestrel Corporation. High resolution, multispectral, wide field of view retinal imager. 6,331,059, Cl. 351-221.000.

Kuhajek, Eugene J.: *See*—
Waatti, Kurt J.; and Kuhajek, Eugene J., 6,331,261, Cl. 252-184.000.

Kuhar, Otto: *See*—
Ciuca, Zazu; Woods, Patrick; Palmer, Roger; Ruggles, Brian; and Kuhar, Otto, 6,330,899, Cl. 160-170.00R.

Kuji, Youichi: *See*—
Nishimura, Hirofumi; Kuji, Youichi; Kono, Seiko; Yamashita, Hiroyuki; and Araki, Keiji, 6,330,796, Cl. 60-286.000.

Kulite Semiconductor Products Inc.: *See*—
Kurtz, Anthony D.; and Gardner, Robert, 6,330,829, Cl. 73-717.000.

Kulwicki, Bernard M.; and Tsu, Robert, to Texas Instruments Incorporated. Barium strontium titanate (BST) thin films using boron. 6,331,325, Cl. 427-79.000.

Kumada, Shuichi, to Canon Kabushiki Kaisha. Image processing method and apparatus in which a table stores by a scan line unit memory addresses at each of which a function is stored for developing an image for one line into a memory. 6,331,897, Cl. 358-1.900.

Kumar, Harsh: *See*—
Baweja, Gunjeet; and Kumar, Harsh, 6,332,189, Cl. 712-238.000.

Kumar, Naresh: *See*—
Raghavan, B. Vijay; Ramana, K. V.; Khera, Brij; and Kumar, Naresh, 6,331,638, Cl. 548-432.000.

Kumar, Puneet: *See*—
Birrell, Andrew; Laing, William; and Kumar, Puneet, 6,332,175, Cl. 711-112.000.

Kumar, Sushil: *See*—
Puttan, Krishnamurthy; Gowda, Nadur Muddanna Nanje; Rao, Eranki Venkata Surya Prakasa; and Kumar, Sushil, 6,331,198, Cl. 71-28.000.

Kumar, Yashdeep; and Malackowski, Donald, to Stryker Corporation. Battery charger capable of evaluating battery charge state based on the charging history of the battery. 6,331,761, Cl. 320-132.000.

Kunda, Sastry A.: *See*—
Ng, John S.; Wang, Ping T.; Baez, Julio A.; Liu, Chin; Anderson, Dennis K.; Lawson, Jon P.; Erb, Bernhard; Wieczorek, Joseph; Mucciariello, Gennaro; Vanzanella, Fortunato; Kunda, Sastry A.; Letendre, Leo J.; Pozzo, Mark J.; Sing, Yuen-Lung L.; and Yonan, Edward E., 6,331,622, Cl. 540-41.000.

Kunnari, Nancy D.: *See*—
Mason, Martin T.; Kunnari, Nancy D.; and Kuo, Harry H., 6,331,784, Cl. 326-8.000.

Kuno, Takatsugu, to Minolta Co., Ltd. Controller for image forming apparatus. 6,331,900, Cl. 358-1.900.

Kuo, Harry H.: *See*—
Mason, Martin T.; Kunnari, Nancy D.; and Kuo, Harry H., 6,331,784, Cl. 326-8.000.

Kuo, Tiao-Hua; Kasa, Yasushi; and Chen, Johnny C., to Fujitsu Limited; and Advanced Micro Devices, Inc. Write protect input implementation for a simultaneous operation flash memory device. 6,331,950, Cl. 365-185.180.

Küppers, Peter. Rhythm instrument with several cymbals of graduated diameters. 6,331,667, Cl. 84-422.300.

Kuramasu, Keizaburo: *See*—
Kawakita, Tetsuo; Kuramasu, Keizaburo; and Ikuda, Shigeo, 6,331,476, Cl. 438-486.000.

Kuramoto, Shigefumi; Sakai, Yasuhiro; Ikeda, Hayato; and Ando, Nobuyuki, to Nippon Shokubai Co., Ltd. Developer for electrostatic image. 6,331,373, Cl. 430-110.000.

Kuraray Co., Ltd.: *See*—
Tokuyasu, Jin; Isoue, Koichiro; Nagareda, Katsushi; and Onishi, Takashi, 6,331,650, Cl. 564-463.000.

Kurian, Joseph Varapadavil; and Chang, Jing Chung, to Du Pont de Nemours, E. I., and Company. Low emission polymer compositions. 6,331,264, Cl. 264-172.170.

Kurihara, Kiyokazu: *See*—
Uchiyama, Kenichi; Kurihara, Kiyokazu; and Yuri, Hidetaka, 6,330,746, Cl. 29-872.000.

Kuroda, Tadahiro: *See*—
Hamada, Mototeugu; and Kuroda, Tadahiro, 6,331,796, Cl. 327-208.000.

Kuroda, Yoichi; Naito, Yasuyuki; Hori, Haruo; Kondo, Takanori; and Asakura, Kyoshin, to Murata Manufacturing Co., Ltd. Multilayer capacitor, electronic device and high frequency circuit using the same. 6,331,930, Cl. 361-306.300.

Kurohmaru, Shunichi: *See*—
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Kurokawa, Koji: *See*—
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Kurokawa, Naohiro: *See*—
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Kurtek, Ed: *See*—
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Kurts, Tsvika; Nathan, Ofer J.; and Zavertnik, John M., to Intel Corporation. Integrated breakpoint detector and associated multi-level breakpoint techniques. 6,331,957, Cl. 365-201.000.

Kurtz, Anthony D.; and Gardner, Robert, to Kulite Semiconductor Products Inc. Oil-filled pressure transducer. 6,330,829, Cl. 73-717.000.

Kurtz, William E.: *See*—
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Kusakawa, Koichi; and Ichimura, Shigeki, to NHK Spring Co Ltd. Surface-decorated foam skin of cross-linked rubbery soft olefin resin. 6,331,576, Cl. 521-142.000.

Kutach, Steve V., III; and Kutach, Steve V., Jr. Rake assembly. 6,330,784, Cl. 56-375.000.

Kutach, Steve V., Jr.: *See*—
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Kuusama, Juha; Juhola, Minna; and Laaksonen, Juha, to Flextronics Design Finland Oy. Bass management system for home theater equipment. 6,332,026, Cl. 381-17.000.

Kuwabara, Toshiyuki: *See*—
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Kuwahara, Seiji: *See*—
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Kwak, Jong-Seop; and Kang, Kyeung-Yae, to SamSung SDI Co., Ltd. Inner shield coupling structure for CRT. 6,331,751, Cl. 313-402.000.

Kwietniak, Keith T.: *See*—
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Laaksonen, Juha: *See*—
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Lacey, James Andrew: *See*—
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Ladner, David L.; Grazzini, Andrea J.; and Konezny, Ronald E., to Peoplenet, Inc. Mobile locator system. 6,331,825, Cl. 340-988.000.

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Laine, Edwin F.: *See*—
Daily, William D.; Laine, Daren L.; and Laine, Edwin F., 6,331,778, Cl. 324-557.000.

Laing, Lance G.; Arenas, Jaime E.; Cload, Sharon T.; Lillie, James W.; and Pakula, Andrew A., to Anadys Pharmaceutical, Inc. Screen employing fluorescence anisotropy to identify compounds with affinity for nucleic acids. 6,331,392, Cl. 435-6.000.

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Laird, Peter W.; Eads, Cindy A.; and Danenberg, Kathleen D., to University of Southern California. Process for high-throughput DNA methylation analysis. 6,331,393, Cl. 435-6.000.

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Lammers, Reiner: *See—*
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Langseth, Bjorn; Spiers, Christopher W.; Vella, Mark; and Patel, Dinesh R., to Schlumberger Technology Corporation. Method and apparatus for testing a well. 6,330,913, Cl. 166-250.010.

Lapidus, Albert L'Vovoch; Krylova, Alla Jurievna; Daage, Michel A.; Koveal, Russell J.; and Fiato, Rocco A., to ExxonMobil Research and Engineering Company. Process for the preparation of high activity carbon monoxide hydrogenation catalysts; the catalyst compositions, use of the catalysts for conducting such reactions, and the products of such reactions. 6,331,574, Cl. 518-709.000.

Lapierre, Luciane: *See—*
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Latter, Teresa Farias; Moss, John Wesley; McBlain, Thomas Joseph; Maciejewski, James Thomas; and Hardzinski, Mary Louise, to Ameritech Corporation. Convenience features in a method and system for providing enhanced caller identification. 6,332,021, Cl. 379-142.010.

Lau, Kwok-Wing, to Pleasure Time Products (HK) Limited. Portable recliner assembly. 6,331,033, Cl. 297-325.000.

Lau, Lilip; and Maroney, Charles, to Gore Enterprise Holdings, Inc. Exterior supported self-expanding stent-graft. 6,331,188, Cl. 623-1.130.

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Leak Location Services, Inc.: *See—*
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Leban, Marzio, to Hewlett-Packard Company. Printhead having varied thickness passivation layer and method of making same. 6,331,049, Cl. 347-64.000.

LeBlanc, Michael Robert, to 3Com Corporation. Management information base attribute discriminator. 6,332,142, Cl. 707-100.000.

LeCompte, Malcolm A., to AstroVision, Inc. Direct broadcast imaging satellite system apparatus and method for providing realtime, continuous monitoring of earth from Geostationary Earth orbit. 6,331,870, Cl. 348-144.000.

Lederman, Seth; Chess, Leonard; and Yellin, Michael J., to Trustees of Columbia University in the city of New York, The. Human T cell leukemia cell line designated D1.1. 6,331,433, Cl. 435-325.000.

Lederman, Seth; Chess, Leonard; and Yellin, Michael J., to Trustees of Columbia University in the City of New York, The. Nucleic acid molecule encoding heavy or light chain of an antibody which specifically recognizes a protein specifically recognized by monoclonal antibody 5c8 (anti-CD40 ligand). 6,331,615, Cl. 536-23.530.

Lee, Barry W., to Boral Bricks (NSW) Pty. Ltd. Apparatus to manufacture green bricks. 6,331,105, Cl. 425-324.100.

Lee, Benjamin J.: *See—*
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Lee, Charles Q. Endodontic probe system. 6,331,112, Cl. 433-102.000.

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Lee, Dosuk D.; Rey, Christian; Aiolova, Maria; and Tofighi, Aliassghar, to Etex Corporation. Bioresorbable ceramic composites. 6,331,312, Cl. 424-426.000.

Lee, Duck Myung, to Hyundai Electronics Industries Co., Ltd. Time division equalizer using system clock signal faster than symbol clock signal in high-speed communication. 6,332,000, Cl. 375-232.000.

Lee, Edward R.: *See—*
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Lee, Hsieh Kun; and Lee, Don-Yun, to Foxconn Precision Components Co., Ltd. Heat sink. 6,330,908, Cl. 165-185.000.

Lee, James M.; and Ullrich, Axel, to Genentech, Inc. Preparation of human IGF via recombinant DNA technology. 6,331,414, Cl. 435-69.400.

Lee, James M.; Ullrich, Axel; and Singh, Arjun, to Genentech, Inc. Preparation of human IGF via recombinant DNA technology. 6,331,609, Cl. 530-324.000.

Lee, James M.: *See—*
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Lee, Jueng-gil; Lee, Jung-ho; and Nam, Hyo-rak, to Samsung Electronics Co., Ltd. Method for manufacturing a liquid crystal display. 6,331,443, Cl. 438-30.000.

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Lee, Martin Kin-Fei; Gunn, George Gerald; and Placko, James Michael, to General Electric Company. Apparatus and method for molding a core for use in casting hollow parts. 6,331,267, Cl. 264-401.000.

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Lee, Shi-Cse; and Pan, Tung-Hsing. Broadband communication karaoke. 6,331,669, Cl. 84-609.000.

Lee, Tzung-Han; and Tan, Wayne, to United Microelectronics Corp. Method for improving peeling issues during fabrication of integrated circuits. 6,331,471, Cl. 438-396.000.

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Leto, Alfonso. Stable rack for dish washing scrubbers. 6,330,948, Cl. 211-70.600.

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Li, Jianxun; Zhou, Mei Sheng; Xu, Yi; and Chooi, Simon, to Chartered Semiconductor Manufacturing Ltd. Method to prevent degradation of low dielectric constant material in copper damascene interconnects. 6,331,479, Cl. 438-618.000.

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Angelopoulos, Marie; Dimitrakopoulos, Christos Dimitrios; Furman, Bruce Kenneth; Graham, Teresita Ordonez; and Lien, Shui-Chih Alan, 6,331,356, Cl. 428-411.100.
Chaudhari, Praveen; Galligan, Eileen Ann; Doyle, James Patrick; Lacey, James Andrew; Lien, Shui-Chih Alan; Nakano, Hiroki; and Lu, Minhua, 6,331,381, Cl. 430-320.000.

Lieven, Stuyver; Joost, Louwagie; and Rudi, Rossau, to Innogenetics N.V. Method for detection of drug-induced mutations in the reverse transcriptase gene. 6,331,389, Cl. 435-5.000.

LifeSpex, Incorporated: *See—*
Deckert, Curtis K.; Hildwein, Roger L.; and Wilcox, Robert L., 6,332,092, Cl. 600-476.000.

Light Sciences Corporation: *See—*
Chen, James C.; Huston, Darrin; and Wilkerson, Brian D., 6,331,744, Cl. 310-171.000.

Lillie, James W.: *See—*
Laing, Lance G.; Arenas, Jaime E.; Cload, Sharon T.; Lillie, James W.; and Pakula, Andrew A., 6,331,392, Cl. 435-6.000.

Lim, Kyoung Won; and Lee, Hee Sub, to LG Electronics Inc. Motion prediction apparatus and method. 6,332,002, Cl. 375-240.170.

Lim, Tiang Hock; and Tay, Liang Chee, to Texas Instruments Incorporated. Method of encapsulating thin semiconductor chip-scale packages. 6,331,737, Cl. 257-787.000.

Limburg, William W.: *See—*
Schank, Richard L.; Limburg, William W.; and Renfer, Dale S., 6,331,370, Cl. 430-58.300.

Lin, Allan Ming-Lun: *See—*
Drori, Joseph; and Lin, Allan Ming-Lun, 6,331,768, Cl. 323-369.000.

Lin, Bob Chih-Ming, to Match Lab, Inc. System and method for digital color image processing. 6,331,902, Cl. 358-1.900.

Lin, Chang-Ming. Ratchet screwdriver with rotation control mechanism. 6,330,843, Cl. 81-63.100.

Lin, Jenn-Shing; Rogoszewicz, Richard; and Wang, Jin-Der, to Lucent Technologies Inc. Channel synchronization and impulse sounding in the presence of frequency offset. 6,331,996, Cl. 375-130.000.

Lin, Liken. Structure of a connector for computer peripheral devices. 6,331,125, Cl. 439-660.000.

Lin, Wan-Cheng, to Hon, Hai Precision Ind. Co., Ltd. Expansion circuit board retainer. 6,331,940, Cl. 361-785.000.

Lin, Wen-Chang; and Su, Yu T., to Industrial Technology Research Institute. Partially matched filter for spread spectrum communication. 6,331,998, Cl. 375-143.000.

Lin, Yeu-Lih; and Huang, Aimin, to Foxconn Precision Components Co., Ltd. Heat sink assembly. 6,330,905, Cl. 165-80.300.

Lincoln Global, Inc.: *See—*
Blankenship, George D., 6,331,694, Cl. 219-137.0PS.

Lindstrom, Kyle J.: *See—*
Crooks, Stephen L.; Lindstrom, Kyle J.; Merrill, Bryon A.; and Rice, Michael J., 6,331,539, Cl. 514-228.500.

Ling, Ka Kit: *See—*
Fang, Cheng-Chi; Chang, Chao-I; and Ling, Ka Kit, 6,332,176, Cl. 711-113.000.

Linger, Mats. Corner joint for profile sections. 6,331,092, Cl. 403-382.000.

Link, Larry Ray, to American Cooling Systems, LLC. Magnetic fan clutch having plastic members. 6,331,743, Cl. 310-103.000.

Linkair Communication, Inc.: *See*—
Li, Daoben, 6,331,997, Cl. 375-130.000.

Linker, Karl-Heinz; Findeisen, Kurt; Andree, Roland; Drewes, Mark-Wilhelm; Lender, Andreas; Schallner, Otto; Haas, Wilhelm; Santel, Hans-Joachim; and Dollinger, Markus, to Bayer Aktiengesellschaft. Substituted aromatic thiocarboxylic acid amides and their use as herbicides. 6,331,507, Cl. 504-244.000.

Linnartz, Olaf: *See*—
Munro, Liliana; and Linnartz, Olaf, 6,331,147, Cl. 472-126.000.

Lins, Guenter: *See*—
Branston, David-Walter; Lins, Guenter; and Verieger, Jobst, 6,331,689, Cl. 219-121.590.

Lintec Corporation: *See*—
Akamine, Shoko; Miyazawa, Yasunao; and Maruoka, Shigenobu, 6,331,071, Cl. 366-325.920.

Liou, Liann-Chern; and Lai, Guang-Sheng, to United Microelectronics Corp. Method of fabricating a flash memory. 6,331,464, Cl. 438-257.000.

Lipogel: *See*—
Salles, Jean-Pierre, 6,331,315, Cl. 424-450.000.

Lipscomb, N. Thornton; and Buazza, Omar M., to Ophthalmic Research Group International, Inc. Plastic lens composition and method for the production thereof. 6,331,058, Cl. 351-159.000.

Liroff, Jeff. Cargo seal. 6,331,022, Cl. 292-307.00R.

Litex, Inc.: *See*—
Caren, Robert P.; Ekchian, Leon; and Ekchian, Jack A., 6,330,794, Cl. 60-274.000.

Litton Systems, Inc.: *See*—
Barkataki, Shan; Dousette, Patricia J.; Frederick, Dale F.; Harte, Stuart H.; and Johnson, Gary R., 6,332,210, Cl. 717-1.000.
Iosue, Michael Jude, 6,331,753, Cl. 313-542.000.

Liu, Chin: *See*—
Ng, John S.; Wang, Ping T.; Baez, Julio A.; Liu, Chin; Anderson, Dennis K.; Lawson, Jon P.; Erb, Bernhard; Wieczorek, Joseph; Mucciariello, Gennaro; Vanzanella, Fortunato; Kunda, Sastry A.; Letendre, Leo J.; Pozzo, Mark J.; Sing, Yuen-Lung L.; and Yonan, Edward E., 6,331,622, Cl. 540-41.000.

Liu, Hsin-Tuan; Dickman, Robert B.; Krabacher, Kenneth W.; Steinmetz, Gregory T.; Beacher, Brent F.; and Doloresco, Bryan K., to General Electric Company. Doubled bowed compressor airfoil. 6,331,100, Cl. 416-238.000.

Liu, Te-Hsi. Dust collect device for an eraser. 6,330,732, Cl. 15-314.000.

Liu, Wan-Yi; and Jeng, Pei-Ren, to Macronix International Co., Ltd. Method for forming shallow trench isolation. 6,331,472, Cl. 438-424.000.

Liu, Yi: *See*—
Lynnworth, Lawrence C.; and Liu, Yi, 6,330,831, Cl. 73-861.280.

Liu, Yong; Wu, Yeong-Wei Andy; and Li, Rongsheng, to Hughes Electronics Corporation. System for star catalog equalization to enhance attitude determination. 6,330,988, Cl. 244-164.000.

Livant, Donna L., to University of Michigan, The Regents of the. Methods and compositions for wound healing. 6,331,409, Cl. 435-29.000.

Livengood, Bryan Patrick; Minor, James Craig; Moore, Michael Thomas; Olson, John Melvin; Piffarerio, Minerva; and Ting, Vincent Wen-Hwa, to Lexmark International, Inc. Toner particulates comprising an ethylene propylene wax. 6,331,372, Cl. 430-108.800.

Livine, Eyal: *See*—
Gever, Eval; Hermoni, Nir; Bergman, Orit; Tayar, Gil; Reshef, Eilon; Gill, Doron; Feuerstein, Addy; Caneti, Yaron; Oppenheim, Roy; Etam, Eran; Shpeizer, Zohar; Borer, Yoav; Livine, Eyal; Kikin, Ruth; Zuckerman, Oren; and Kaas, Ron, 6,331,861, Cl. 345-629.000.

Ljungquist, Olle, to Pharmacia AB. Device for displacing a member in a container. 6,331,173, Cl. 604-191.000.

Loboda, Alexandre V.: *See*—
Krutchinsky, Andrew N.; Loboda, Alexandre V.; Spicer, Victor L.; Ens, Werner; and Standing, Kenneth G., 6,331,702, Cl. 250-281.000.

Loce, Robert P.; and Branciforte, Michael, to Xerox Corporation. System and method for enhancement of image contour fidelity. 6,332,044, Cl. 382-269.000.

Locke, Peter S.: *See*—
Andricacos, Panayotis C.; Horkans, W. Jean; Kwietniak, Keith T.; Locke, Peter S.; and Uzoh, Cyprian E., 6,331,237, Cl. 205-98.000.

Loeb, Marvin P.; and Shaolian, Samuel M., to Cardiodyne, Inc. User actuated laser energy device and procedure for forming a channel within tissue. 6,331,178, Cl. 606-13.000.

Loeb, Michael; and Nimons, John, to Synapse Group, Inc. Method and system for managing magazine portfolios. 6,332,124, Cl. 705-1.000.

Loftesness, Scott J.: *See*—
Peirce, Roger L.; Rhoads, Bruce C.; Duncan, John; Loftesness, Scott J.; Johnson, Kurt W.; Dobbs, Mary K.; and Mayes, Dan, 6,332,126, Cl. 705-14.000.

Lohray, Braj Bhushan: *See*—
Lohray, Vidya Bhushan; Lohray, Braj Bhushan; Paraselli, Rao Bheema; Ramanujam, Rajagopalan; and Chakrabarti, Ranjan, 6,331,627, Cl. 544-284.000.

Lohray, Vidya Bhushan; Lohray, Braj Bhushan; Paraselli, Rao Bheema; Ramanujam, Rajagopalan; and Chakrabarti, Ranjan, to Reddy's Laboratories Ltd. Intermediates of benzoxazinone derivatives and preparation thereof. 6,331,627, Cl. 544-284.000.

Loika, Steve. Hockey stick mounting assembly. 6,330,950, Cl. 211-85.700.

Lombardy, Richard John: *See*—
Brugnara, Carlo; Halperin, Jose; Bellot, Emile M., Jr.; Froimowitz, Mark; Lombardy, Richard John; Clifford, John J.; Gao, Ying-Duo; Haidar, Reem M.; Kelleher, Eugene W.; Kher, Falguni M.; Moussa, Adel M.; Sachdeva, Yesh P.; Sun, Minghua; and Taft, Heather N., 6,331,564, Cl. 514-520.000.

Lonczak, John: *See*—
Faughey, Michael; and Lonczak, John, 6,330,960, Cl. 222-205.000.

Lonetto, Michael Arthur: *See*—
Burnham, Martin Karl Russel; Lonetto, Michael Arthur; and Warren, Patrick Vernon, 6,331,410, Cl. 435-69.100.

Longenecker, Michael L.: *See*—
Haut, Robert E.; Longenecker, Michael L.; and Pike, Robert T., 6,331,032, Cl. 297-130.000.

Lonmore Company, The: *See*—
Oxley, Lonnie, 6,330,783, Cl. 56-320.200.

Loo, Robert Y.; Schmitz, Adele; Brown, Julia; Foschaar, James; Hyman, Daniel J.; and Hsu, Tsung-Yuan, to Hughes Electronics Corporation. Fabrication of broadband surface-micromachined micro-electro-mechanical switches for microwave and millimeter-wave applications. 6,331,257, Cl. 216-13.000.

Loper, John C.: *See*—
Wilson, C. Ron; Craft, David L.; Eirich, L. Dudley; Eshoo, Mark; Madduri, Krishna M.; Cornett, Cathy A.; Brenner, Alfred A.; Tang, Maria; Loper, John C.; and Gleeson, Martin, 6,331,420, Cl. 435-145.000.

Loprete, Joseph F.; Young, Michael R; Tolbert, John W, Jr.; Monk, David T; Wagner, Philip C; Hill, Joe T; Pippin, Larry; and Peters, Robert B., to Bristol Compressors, Inc. Two stage reciprocating compressors and associated HVAC systems and methods. 6,331,925, Cl. 361-22.000.

L' Oreal: *See*—
Afriat, Isabelle; and Boulier, Virginie, 6,331,306, Cl. 424-401.000.
Gueret, Jean-Louis H., 6,331,086, Cl. 401-129.000.
Sebillotte-Arnaud, Laurence; and Gagnebien, Didier, 6,331,307, Cl. 424-401.000.
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Loudon, Robert Eben: *See*—
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Loughnane, Cathal: *See*—
Kouwenberg, Tineke C; Kouwenberg, Robert J; Petersen, Soren; Wall, Michael T; Morgan, David L; and Loughnane, Cathal, 6,330,808, Cl. 62-372.000.

Louhed, Jamila: *See*—
Dumoutier, Laure; Louhed, Jamila; and Renauld, Jean-Christophe, 6,331,613, Cl. 536-23.500.

Lowe, Christopher: *See*—
Dyke, Hazel Joan; Lowe, Christopher; and Montana, John Gary, 6,331,556, Cl. 514-378.000.

Lowemark, Bengt, to Trego Maskin AB. Tool for mounting disk valves in motor cylinder heads. 6,330,737, Cl. 29-214.000.

LSI Logic Corporation: *See*—
Aronowitz, Sheldon; Puchner, Helmut; Kapre, Ravindra A.; and Kimball, James P., 6,331,468, Cl. 438-287.000.
Ducaroir, Francois; Nakamura, Karl S.; and Jenkins, Michael O., 6,331,999, Cl. 375-226.000.
Humlicek, Donald R., 6,332,177, Cl. 711-114.000.
de Garrido, Diego P.; Uz, Kamil Metin; Kohn, Leslie D.; and LeGall, Didier, 6,331,874, Cl. 348-452.000.

LTX Corporation: *See*—
Organ, Donald V.; Deome, Mark E.; Techasaratoole, Rajaneekara; and Greene, Val N., 6,332,212, Cl. 717-4.000.

Lu, Minhua: *See*—
Chaudhari, Praveen; Galligan, Eileen Ann; Doyle, James Patrick; Lacey, James Andrew; Lien, Shui-Chih Alan; Nakano, Hiroki; and Lu, Minhua, 6,331,381, Cl. 430-320.000.

Lu, Pang-Chia; and Cleckner, Michael Dale, to ExxonMobil Oil Corporation. Ink receptive coextruded film. 6,331,346, Cl. 428-195.000.

Luan, Jiyuan: *See*—
Thomas, Brian; Beaufils, Jean-Marc; Cogan, Adrian; Dallemange, Bernard; Gozlan, Gilles; Luan, Jiyuan; Thornton, Neill; and Toth, James, 6,331,763, Cl. 320-136.000.

Lubkin, Jeremy: *See*—
Naviasky, Eric H.; Hufford, Michael M.; and Lubkin, Jeremy, 6,331,833, Cl. 341-143.000.

Lubock, Paul: *See*—
Burbank, Fred H.; Jones, Michael L.; and Lubock, Paul, 6,331,166, Cl. 600-567.000.

Lubrizol Corporation, The: *See*—
Curtis, Thomas T.; Lamb, Gordon D.; and Abraham, William D., 6,331,510, Cl. 508-578.000.
Quinn, Robert E.; Burke, W. Michael; Henry, William S.; and Goodlive, Steven A., 6,331,647, Cl. 562-105.000.
Sivik, Matthew R.; and Bryant, Charles P., 6,331,603, Cl. 526-307.000.

Lucas Industries, plc: *See*—
Davies, Gary Raymond, 6,331,767, Cl. 323-282.000.

Lucent Technologies Inc.: *See*—
Adams, Laura Ellen; Bethea, Clyde George; Eskildsen, Lars Erik; Nykolak, Gerald; People, Rossevelt; and Tanbun-Ek, Tawee, 6,331,908, Cl. 359-188.000.
Bhowmik, Siddhartha; Merchant, Sailesh Mansinh; Oh, Minseok; Roy, Pradip Kumar; and Sen, Sidhartha, 6,331,484, Cl. 438-648.000.

Lin, Jenn-Shing; Rogoszewicz, Richard; and Wang, Jin-Der, 6,331,996, Cl. 375-130.000.
Mitra, Debasis; Morrison, John A.; and Ramakrishnan, Kajamalai Gopalaswamy, 6,331,986, Cl. 370-468.000.
Luciani, James V., to Nortel Networks Limited. Method for synchronizing network address translator (NAT) tables using the server cache synchronization protocol. 6,331,984, Cl. 370-401.000.
Ludwig, Bryan: *See*—
Brunelli, Shon; Kennedy, Timothy; and Ludwig, Bryan, 6,330,729, Cl. 15-102.000.
Brunelli, Shon; Kennedy, Timothy; and Ludwig, Bryan, 6,331,213, Cl. 134-6.000.
Ludwig Institue for Cancer Research: *See*—
Dumoutier, Laure; Louhed, Jamila; and Renauld, Jean-Christophe, 6,331,613, Cl. 536-23.500.
Ludwig Institute for Cancer Research: *See*—
Eriksson, Ulf; Olofsson, Birgitta; Alitalo, Kari; and Pajusola, Katri, 6,331,301, Cl. 424-145.100.
Miyazono, Kohei; ten Dijke, Peter; Franzen, Petra; Yamashita, Hidetoshi; and Heldin, Carl-Henrik, 6,331,621, Cl. 536-232.000.
Luettgens, Guenter: *See*—
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Luff, Craig Janson: *See*—
Orr, Christopher Henry; Luff, Craig Janson; Dockray, Thomas; Macarthur, Duncan Whittemore; Bounds, John Alan; and Koster, James E., 6,331,706, Cl. 250-385.100.
Orr, Christopher Henry; Luff, Craig Janson; Dockray, Thomas; and Macarthur, Duncan Whittemore, 6,331,707, Cl. 250-387.000.
Lundgren, Staffan; Jobson, Edward; Unosson, Anders; and Salomonsson, Per, to Volvo Car Corporation. Device and method for reduction of oxides of nitrogen. 6,331,232, Cl. 204-265.000.
Lundquist, Ronald C.; and Walters, David A., to DeKalb Genetics Corp. Insect resistant fertile transgenic corn plants. 6,331,665, Cl. 800-302.000.
Lundqvist, Lennart, to Telefonaktiebolaget LM Ericsson (publ). Modulator and method for manufacturing of such a modulator. 6,332,048, Cl. 385-2.000.
Lunginsland, Hans-Detlef; and Batz-Sohn, Christoph, to Degussa Aktiengesellschaft. Oligomeric organosilanepolysufanes, their use in rubber mixtures and for preparing molded articles. 6,331,605, Cl. 528-30.000.
Luo, Mengkui: *See*—
Sealey, James E., II; Persinger, W. Harvey, Jr.; Luo, Mengkui; Roscelli, Vincent A.; and Neogi, Amar N., 6,331,354, Cl. 428-393.000.
Luo, Steven, to Bridgestone Corporation. Process for producing blends of syndiotactic 1,2-polybutadiene and rubbery elastomers with an iron-based catalyst system. 6,331,594, Cl. 525-247.000.
Luther, James P.; and Zimmer, Ranier, to Corning Cable Systems LLC. Optical fiber ribbon cables with controlled bending behavior. 6,332,052, Cl. 385-114.000.
Luu, Ky Thoai: *See*—
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Lux, Jürgen Alfred: *See*—
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Luzio, John Paul: *See*—
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Lydic, Todd L.; and Kurtz, William E., to JAC Patent Company. Railroad car tub. 6,330,863, Cl. 105-355.000.
Lyke, James C., to United States of America, Air Force. Simplified cellular array structure for programmable Boolean networks. 6,331,788, Cl. 326-39.000.
Lynnworth, Lawrence C.; and Liu, Yi, to Panametrics, Inc. Stream-cleaned differential reflection coefficient sensor. 6,330,831, Cl. 73-861.280.
Lyons, Shawn L.; and Wright, Steven G., to Alkermes Controlled Therapeutics II Inc. Apparatus and method for preparing microparticles. 6,331,317, Cl. 424-489.000.
Lyznik, Leszek Alexander: *See*—
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Ma, Diana Xiaobing: *See*—
Ye, Yan; Ionov, Pavel; Zhao, Allen; Hsieh, Peter Chang-Lin; Ma, Diana Xiaobing; Yan, Chun; and Yuan, Jie, 6,331,380, Cl. 430-318.000.
Mabrito, Craig A.: *See*—
Morris, Alan C.; Mabrito, Craig A.; and Roberts, Matthew R., 6,331,113, Cl. 433-215.000.
Mabry, Frank Robert; and Rhodes, James Scott, to MEMC Electronic Materials, Inc. Radio frequency identification system and method for tracking silicon wafers. 6,330,971, Cl. 235-383.000.
Macarthur, Duncan Whittemore: *See*—
Orr, Christopher Henry; Luff, Craig Janson; Dockray, Thomas; Macarthur, Duncan Whittemore; Bounds, John Alan; and Koster, James E., 6,331,706, Cl. 250-385.100.
Orr, Christopher Henry; Luff, Craig Janson; Dockray, Thomas; and Macarthur, Duncan Whittemore, 6,331,707, Cl. 250-387.000.
MacConnell, William P.: *See*—
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MacDonald, Douglas B.; King, Jonathan J.; Sanders, Steven E.; Rheault, Alan E.; Dykstra, James R.; Waalkes, Michael L.; Walz, David A.; Williams, Patricia A.; Gravel, Donald P.; and Chang, Joseph, to Steelcase Development Corporation. Stacking bracket for partitions. 6,330,773, Cl. 52-239.000.
MacDonald, John G.: *See*—
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Maciejewski, James Thomas: *See*—
Latter, Teresa Farias; Moss, John Wesley; McBlain, Thomas Joseph; Maciejewski, James Thomas; and Hardzinski, Mary Louise, 6,332,021, Cl. 379-142.010.
Macronix International Co., Ltd.: *See*—
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Madduri, Krishna M.: *See*—
Wilson, C. Ron; Craft, David L.; Eirich, L. Dudley; Eshoo, Mark; Madduri, Krishna M.; Cornett, Cathy A.; Brenner, Alfred A.; Tang, Maria; Loper, John C.; and Gleeson, Martin, 6,331,420, Cl. 435-145.000.
Maes, Stephane H.: *See*—
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Magnecomp Corporation: *See*—
Mei, Shijin, 6,331,923, Cl. 360-294.400.
Mahgerefteh, Daniel, to United States of America, National Security Agency. Transmission system using a semiconductor laser and a fiber grating discriminator. 6,331,991, Cl. 372-33.000.
Mahiout, Said: *See*—
Klinksiek, Bernd; Mahiout, Said; Nothelle, Ricarda-Christine; Hamann, Hans-Jürgen; and Sdebik, Jürgen, 6,331,314, Cl. 424-450.000.
Mailloux, Alain: *See*—
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Makaran, John Edward, to Siemens Canada Limited. Staggered pulse width modulation apparatus and method for EMI minimization in motor. 6,331,757, Cl. 318-254.000.
Makienko, Oleg Mikhailovich; Rumyantsev, Nikolai Grigoryevich, deceased; and Petrushenko, Yury Vladimirivich, to Samsung Display Devices Co., Ltd. Excitation method of laser cathode-ray tube. 6,331,749, Cl. 313-2.100.
Makino, Kazumasa: *See*—
Yokota, Eiji; Hirose, Atsuo; Takagi, Kazuhiko; Kashima, Hiroyuki; and Makino, Kazumasa, 6,331,003, Cl. 271-290.000.
Makino, Toshihiko: *See*—
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Makita, Hidehisa; Mimura, Toshihiko; Mori, Masahiro; Inoue, Yuji; Shiomi, Satoru; Komori, Ayako; Nagao, Yoshitaka; Sasaoka, Makoto; and Itoyama, Shigenori, to Canon Kabushiki Kaisha. Installation structure of solar cell module array, installation method of solar cell module, and sunlight power generation system. 6,331,671, Cl. 136-244.000.
Makita, Hideyuki: *See*—
Murai, Taeko; Matsumoto, Shuzo; Fujii, Mitsumi; Nakano, Tomoaki; Makita, Hideyuki; Ohta, Yoshihisa; Kakuda, Shinichi; and Hirota, Tetsuro, 6,331,052, Cl. 347-68.000.
Makram-Ebeid, Shérif; and Philip, Matthieu, to U.S. Philips Corporation. Image processing method including steps for the segmentation of a multidimensional image, and medical imaging apparatus utilizing this method. 6,332,034, Cl. 382-128.000.
Malackowski, Donald: *See*—
Kumar, Yashdeep; and Malackowski, Donald, 6,331,761, Cl. 320-132.000.
Maldonado-Cortés, Demófilo, to Prolec GE, S. de R.L. de C.V. Mounting system for a circuit breaker. 6,331,685, Cl. 200-17.00R.
Malkovsky, Miroslav; and Wells, Andrew D., to Wisconsin Alumni Research Foundation. Immune response enhancer. 6,331,388, Cl. 435-5.000.
Maltesh, Chidambaram: *See*—
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Malvar, Michael: *See*—
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Manabe, Naoki: *See*—
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Manassen, Amnon; Yahav, Giora; and Iddan, Gavriel J., to 3DV Systems Ltd. Large aperture optical image shutter. 6,331,911, Cl. 359-260.000.
Maneval, Daniel C.: *See*—
Scheule, Ronald K.; Bagley, Rebecca G.; Eastman, Simon J.; Cheng, Seng H.; Marshall, John; Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Chang, Chau-Dung; Hubbard, S. Catherine; Johnson, Duane E.; Maneval, Daniel C.; Shepard, H. Michael; and Gregory, Richard J., 6,331,524, Cl. 514-44.000.
Mangeiga, John A.; Wilusz, Christopher J.; and Dykhuizen, Cornelius H., to General Electric Company. Aircraft engine mount. 6,330,995, Cl. 248-554.000.
Mani, K. N., to Archer Daniels Midland Company. Electrodialysis of salts for producing acids and bases. 6,331,236, Cl. 204-525.000.
Manibs Spezialarmaturen GmbH & Co. KG: *See*—
Hintzen, Werner, 6,331,698, Cl. 219-535.000.

Manjunath, B. S.; Chae, Jong Jin; Mukherjee, Debargha; and Mitra, Sanjit K., to University of California, The Regents of the. Method for embedding and extracting digital data in images and video. 6,332,030, Cl. 382-100.000.

Manjunath, Geetha, to Hewlett-Packard Company. Hybrid just-in-time compiler that consumes minimal resource. 6,332,216, Cl. 717-5.000.

Mann, Claudia; Weigand, Udo; and Melzig, Manfred, to Optische Werke G. Rodenstock. Photochromic spirofluorenopyran compounds. 6,331,625, Cl. 544-70.000.

Mann, Elaina: *See*—
Hirth, Klaus P.; Mann, Elaina; Shawyer, Laura K.; Ullrich, Axel; Szekely, Istvan; Bajor, Tamas; Haimichael, Janis; Orfi, Laszlo; Levitzki, Alex; Gazit, Aviv; Tang, Peng Cho; and Lammers, Reiner, 6,331,555, Cl. 514-378.000.

Mannesmann VDO AG: *See*—
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Manowski, Maxwell E.: *See*—
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Manteiga, John Alan; Dykhuizen, Cornelius Harm; Joseph, Thomas Peter; Wilusz, Christopher James; Troup, Robert Eugene; Boger, Ethan; and Franceschelli, Anthony John, to General Electric Company. Link component for aircraft engine mounting systems. 6,330,985, Cl. 244-54.000.

Manthiram, Arumugam; and Kim, Jaekook, to Board of Regents, The University of Texas System. Manganese oxyiodides and their method of preparation and use in energy storage. 6,331,282, Cl. 423-599.000.

Manufacturers' Services Ltd.: *See*—
Coll, Brian M., 6,331,076, Cl. 374-102.000.

Manza, Marc B.: *See*—
Boroditsky, Marc D.; and Manza, Marc B., 6,332,192, Cl. 713-168.000.

Manzella, Francis; and Riegelman, Harry, to Thermo-Roll Window Corp. Sash mount system. 6,330,769, Cl. 52-204.620.

Marash, Joseph, to Andrea Electronics Corporation. Dual-processing interference cancelling system and method. 6,332,028, Cl. 381-92.000.

Marchand, Bernard: *See*—
Nieh, Benjamin B.; Pillar, John F.; Guttman, Jacob; Marchand, Bernard; and Rabie, Sameh, 6,331,970, Cl. 370-230.000.

Marenco, Alvaro Luis; and Mitchell, Jaime Tadeo, to Agere Systems Guardian Corp. Multiple line framer engine. 6,331,988, Cl. 370-510.000.

Maroney, Charles: *See*—
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Mars UK Limited: *See*—
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Marsh, Katrina Anne: *See*—
Watson, Timothy David George; and Marsh, Katrina Anne, 6,331,567, Cl. 514-560.000.

Marshall, James B: *See*—
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Marshall, John: *See*—
Scheule, Ronald K.; Bagley, Rebecca G.; Eastman, Simon J.; Cheng, Seng H.; Marshall, John; Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Chang, Chau-Dung; Hubbard, S. Catherine; Johnson, Duane E.; Maneval, Daniel C.; Shepard, H. Michael; and Gregory, Richard J., 6,331,524, Cl. 514-44.000.

Marshall, O'Toole, Gerstein, Murray & Borun: *See*—
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Marti, Erwin: *See*—
Rohringer, Peter; Geoffroy, André; Burkhard, Andreas; Marti, Erwin; Schreiber, Werner; and Zelger, Josef, 6,331,626, Cl. 544-193.200.

Martin, Frank G., to Del Industries, Inc. Ozone generating apparatus. 6,331,279, Cl. 422-186.070.

Martinez, Edgar, to Nortel Networks Limited. Method and apparatus for routing emergency services calls in an intelligent network. 6,332,022, Cl. 379-220.010.

Martini Bernardi, Neri; Martini Bernardi, Sebastiano; and Martini Bernardi Colantoni, Niccoló, to Vivo S.r.l. Method for preservation of olive oil. 6,331,643, Cl. 554-7.000.

Martini Bernardi, Sebastiano: *See*—
Martini Bernardi, Neri; Martini Bernardi, Sebastiano; and Martini Bernardi Colantoni, Niccoló, 6,331,643, Cl. 554-7.000.

Martini Bernardi Colantoni, Niccoló: *See*—
Martini Bernardi, Neri; Martini Bernardi, Sebastiano; and Martini Bernardi Colantoni, Niccoló, 6,331,643, Cl. 554-7.000.

Marumo, Yoshinori; and Hayashi, Teruyuki, to Tokyo Electron Limited. Thickness measuring apparatus, substrate processing method, and substrate processing apparatus. 6,331,890, Cl. 356-369.000.

Maruoka, Shigenobu: *See*—
Akamine, Shoko; Miyazawa, Yasunao; and Maruoka, Shigenobu, 6,331,071, Cl. 366-325.920.

Maruya, Kensuke: *See*—
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Maruyama, Yoshinaga: *See*—
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Marvell International Ltd: *See*—
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Masazumi, Naoki; Kobayashi, Nobuyuki; Okada, Masakazu; Hashimoto, Kiyofumi; and Hatano, Takuji, to Minolta Co., Ltd. Method of making a liquid crystal device. 6,331,884, Cl. 349-156.000.

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Mason, Martin T.; Kunnari, Nancy D.; and Kuo, Harry H., to Atmel Corporation. Secure programmable logic device. 6,331,784, Cl. 326-8.000.

Massachusetts Institute of Technology: *See*—
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Massey, Fred. Apparatus for controlling a remote controlled airplane. 6,331,114, Cl. 434-32.000.

Masuda, Atsushi, to Taiyo Yuden Co., Ltd. Multi layer ceramic capacitor. 6,331,929, Cl. 361-303.000.

Masuda, Kazuaki: *See*—
Shimazu, Satoshi; Sugitani, Hiroshi; Masuda, Kazuaki; Ikeda, Masami; Ishinaga, Hiroyuki; Kashino, Toshio; Kubota, Masahiko; Yoshihira, Aya; and Kudo, Kiyomitsu, 6,331,043, Cl. 347-48.000.

Masuda, Takayuki: *See*—
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Matsuda, Fumihiko: *See*—
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Matsuda, Keiji: *See*—
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Matsuda, Koichi; and Matsuyama, Jinsho, to Canon Kabushiki Kaisha. Photovoltaic cell and method for manufacturing the same. 6,331,672, Cl. 136-256.000.

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Matsui, Naoyuki, to NEC Corporation. Electrophotographic photoreceptor and its manufacturing method. 6,331,371, Cl. 430-65.000.

Matsui, Shigeru; Yashima, Noboru; Kizu, Naoki; Sugiyama, Kazuhiro; and Hiratsuka, Yukari, to Mitsubishi Denki Kabushiki Kaisha. Disk-rotation control apparatus. 6,331,967, Cl. 369-47.030.

Matsui, Shinzo: *See*—
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Matsumoto, Satoshi: *See*—
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Matsuo, Shinichiro, to Fujitsu Limited. Switching equipment capable of transferring priority information and priority connecting method. 6,331,980, Cl. 370-395.000.

Matsuoka, Saiji: *See*—
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Matsushita Electric Industria, Co., Ltd.: *See*—
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Matsushita Electric Industrial Co., Ltd.: *See*—
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Matsushita Electric Works, Ltd.: *See*—
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Matsushita Graphic Communication Systems, Inc.: *See*—
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Matsushita, Shoshiro; Shimizu, Ikuo; Toyoda, Hiroshi; and Tanaka, Asako, to Kyowa Yuka Co., Ltd. Process for producing 3,4-dihydroxy-3-cyclobutene-1,2-dione. 6,331,653, Cl. 568-347.000.

Matsuura, Shun; Kageyu, Satoshi; Kato, Hitoshi; Asai, Kayoko; Yoshio, Hiroaki; Kato, Tsuyoshi; Hayakawa, Yoshihiro; and Maruya, Kensuke, to Matsushita Electric Industrial Co., Ltd. Moving image composing system. 6,332,003, Cl. 375-240.230.

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Mauchan, Donald E.; and Norris, Philip R., to Polaroid Corporation. Diagnostic assay system and method having a luminescent readout signal. 6,331,715, Cl. 250-559.400.

Mauldin, Charles H., to Exxon Research and Engineering Company. Preparation of high activity catalysts; the catalysts and their use. 6,331,575, Cl. 518-715.000.

Mausushita Electric Industrial Co., Ltd.: *See*—
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Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V.: *See*—
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Maximovsky, Sergei Nikolaevich; and Radutsky, Grigory Avramovich. Printing machine using laser ejection of ink from cells. 6,330,857, Cl. 101-116.000.

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McCarthy, Thomas J.; and Fadeev, Alexander Y., to University of Massachusetts. Surface modification using hydridosilanes to prepare monolayers. 6,331,329, Cl. 427-387.000.

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McCormick, Gerald D.; and James, Everett B., Jr. Planetary ratchet wrench and pipe cutting tool. 6,330,840, Cl. 81-57.300.

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Meroth, Erwin. Safety support. 6,330,781, Cl. 54-49.000.
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Crooks, Stephen L.; Lindstrom, Kyle J.; Merrill, Bryon A.; and Rice, Michael J., 6,331,539, Cl. 514-228.500.
Merzenich, Michael M.: *See—*
Jenkins, William M.; Merzenich, Michael M.; Miller, Steven L.; Peterson, Bret E.; and Tallal, Paula, 6,331,115, Cl. 434-169.000.
Metatron, Inc.: *See—*
Bourinbaiar, Aldar S., 6,331,610, Cl. 530-324.000.
Meth, Kalman Zvi; and Agbaria, Adnan M., to International Business Machines Corporation. Restoring checkpointed processes including adjusting environment variables of the processes. 6,332,199, Cl. 714-13.000.
Meth, Kalman Zvi; and Agbaria, Adnan M., to International Business Machines Corporation. Capturing and identifying a complete and consistent set of checkpoint files. 6,332,200, Cl. 714-16.000.
Meulink, Steven L., to Bristol-Myers Squibb. Wrench for an implant. 6,330,845, Cl. 81-462.000.
Meyer, Horst: *See—*
Stettner, Martin; Grehl, Matthias; and Meyer, Horst, 6,331,200, Cl. 75-736.000.
Meyer Mfg Co.: *See—*
Cheng, Stanley Kin-Sui, 6,331,328, Cl. 427-261.000.
Mezey, James J., Sr., to Avansys, LLC. Methods and apparatus for thermally processing wafers. 6,331,212, Cl. 118-725.000.
Mi, Zhibao: *See—*
Dong, Junxing; Tang, Zhongming; Mi, Zhibao; and Wang, Bingji, 6,331,565, Cl. 514-532.000.
Miandoab, Farid H.: *See—*
Nally, John F., Jr.; Peterson, William A., Jr.; Miandoab, Farid H.; and Sayar, Hamid, 6,330,981, Cl. 239-533.120.
Michael, Gerald T.; Su, Wei; and Dukes, Michael A., to United States of America, Army. Method for generating test files from scanned test vector pattern drawings. 6,332,032, Cl. 382-113.000.
Michael, Maged A.: *See—*
Reedy, M. Parameswara; Farooqui, Firdous; and Michael, Maged A., 6,331,632, Cl. 548-148.000.
Michel, Jacques: *See—*
Dupire, Marc; and Michel, Jacques, 6,331,265, Cl. 264-289.300.
Michel, Patrick: *See—*
Albano, Andre; Michel, Patrick; Benayoun, Alain; and Le Pennec, Jean-Francois, 6,331,814, Cl. 340-310.010.
Michero, Thomas. Method and device for musical reference. 6,331,668, Cl. 84-477.00R.
Michnik, Yves, to Innocable SA. Monitoring control device with real time data sampling for machine used in the cable industry. 6,330,787, Cl. 57-264.000.
Micro Electronics Group Inc.: *See—*
Drake, Billy Wayne; and Hopkins, Doyle W., 6,330,904, Cl. 164-35.000.
Micro Motion, Inc.: *See—*
Normen, David F.; and Overfeldt, Michael Leon, 6,330,832, Cl. 73-861.357.
Zolock, Michael J.; and Samson, Allan L., 6,331,674, Cl. 174-60.000.
MicroDexterity Systems, Inc.: *See—*
Charles, Steve T.; and Stoughton, Robert S., 6,330,837, Cl. 74-490.060.
Micron Technology: *See—*
Kalpakjian, Kent M.; and Porter, John D., 6,331,766, Cl. 323-268.000.
Micron Technology, Inc.: *See—*
Ahmad, Syed Sajid, 6,331,448, Cl. 438-112.000.
Becker, David S., 6,331,495, Cl. 438-774.000.
Boe, Craig L., 6,330,991, Cl. 248-200.000.
Bolken, Todd O.; Peters, David L.; Tandy, Patrick W.; and Cobbley, Chad A., 6,331,453, Cl. 438-127.000.
Brunelli, Shon; Kennedy, Timothy; and Ludwig, Bryan, 6,330,729, Cl. 15-102.000.
Brunelli, Shon; Kennedy, Timothy; and Ludwig, Bryan, 6,331,213, Cl. 134-6.000.
Cobbley, Chad, 6,331,221, Cl. 156-60.000.
Corisis, David J.; Brooks, Jerry M.; and Moden, Walter L., 6,331,939, Cl. 361-784.000.
Dennison, Charles H., 6,331,725, Cl. 257-368.000.
Doan, Trung T.; Blalock, Guy T.; Durcan, Mark; and Meikle, Scott G., 6,331,488, Cl. 438-698.000.
Duesman, Kevin G.; and Farnworth, Warren M., 6,331,736, Cl. 257-778.000.
Forbes, Leonard; and Geusic, Joseph E., 6,331,465, Cl. 438-260.000.
Honeycutt, Jeffrey; and Sharan, Sujit, 6,331,482, Cl. 438-642.000.
Ireland, Philip J.; Glass, Thomas R.; and Sandhu, Gurtej, 6,331,379, Cl. 430-314.000.
Juengling, Werner, 6,331,461, Cl. 438-253.000.
New, Daryl C., 6,331,442, Cl. 438-3.000.
Overgaard, Mark F., 6,331,927, Cl. 361-212.000.
Parekh, Kunal R.; Wu, Zhiqiang; and Li, Li, 6,331,720, Cl. 257-308.000.
Sabde, Gundu M.; and Meikle, Scott, 6,331,135, Cl. 451-41.000.
Sharan, Sujit, 6,331,493, Cl. 438-765.000.
Sheikh, Tahir Q.; Johnson, Karl S.; and Nguyen, Ken, 6,332,202, Cl. 714-39.000.
Walker, Michael A.; and Robinson, Karl M., 6,331,139, Cl. 451-490.000.
Weber, Richard; and Larsen, Corey, 6,332,183, Cl. 711-170.000.
Microsense Cardiovascular Systems (1196) Ltd.: *See—*
Kaplan, Shay, 6,331,163, Cl. 600-486.000.
Microvision, Inc.: *See—*
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Midtronics, Inc.: *See—*
Bertness, Kevin I., 6,331,762, Cl. 320-134.000.
Bertness, Kevin I., 6,332,113, Cl. 702-63.000.
Mighdoll, Lee S.; Leak, Bruce A.; Perlman, Stephen G.; and Goldman, Phillip Y., to WebTV Networks, Inc. Method of accessing multiple services from multiple service providers. 6,332,157, Cl. 709-217.000.
Mikame, Daisuke; Ban, Wataru; and Matsunaga, Hideo, to Bridgestone Sports Co., Ltd. Wood club head. 6,331,149, Cl. 473-330.000.
Mikami, Shigeyuki; Hiratsuka, Toshiro; and Sonoda, Tomiya, to Murata Manufacturing Co., Ltd. Dielectric resonator device. 6,331,808, Cl. 333-134.000.
Mikami, Yoshiro: *See—*
Kitajima, Masaaki; Tsumura, Makoto; Mikami, Yoshiro; Funahata, Katsuyuki; Nagae, Yoshiharu; Wakui, Yoko; Saito, Ryuichi; Matsui, Makoto; and Nemoto, Fumiaki, 6,331,845, Cl. 345-88.000.
Miki, Wataru: *See—*
Nakahara, Koichi; Fujii, Takahisa; Miki, Wataru; Nagami, Kenzoh; and Arai, Kunio, 6,331,320, Cl. 424-725.000.
Mikkelsen, Ivan: *See—*
Perregaard, Jens Kristian; Mikkelsen, Ivan; and Pedersen, Henrik, 6,331,544, Cl. 514-252.130.
Mikoshiba, Shigeo: *See—*
Nishiyama, Seiichi; Takaku, Shigetake; Takeda, Yoshiharu; Mikoshiba, Shigeo; Shiga, Tomokazu; and Hashimoto, Koji, 6,331,064, Cl. 362-260.000.
Milewski, Joseph M.; and Woychik, Charles G., to International Business Machines Corporation. Process to produce a high temperature interconnection. 6,330,967, Cl. 228-180.220.
Millennium Pharmaceuticals, Inc.: *See—*
Robison, Keith E., 6,331,427, Cl. 435-226.000.
Miller, Matthew L.: *See—*
Bloom, Jeffrey A.; Cox, Ingemar J.; and Miller, Matthew L., 6,332,194, Cl. 713-176.000.
Miller, Michael D.; and Hume, Garrard, to Hewlett-Packard Company. Inkjet printhead with top plate bubble management. 6,331,055, Cl. 347-92.000.
Miller, Steven L.: *See—*
Jenkins, William M.; Merzenich, Michael M.; Miller, Steven L.; Peterson, Bret E.; and Tallal, Paula, 6,331,115, Cl. 434-169.000.
Millet, Timothy J.: *See—*
Hussain, Zahid S.; and Millet, Timothy J., 6,331,857, Cl. 345-522.000.
Milliman, Keith L.; Viola, Frank J.; Orban, Joseph, III; and Lehn, Randolph F., to United States Surgical Corporation. Surgical stapling apparatus. 6,330,965, Cl. 227-176.100.

Millon, Joel; Berger, Kenneth; Readdy, Robert; and Samaroo, Derek, to Colgate-Palmolive Company. Decorated polyester tube package for aqueous compositions. 6,331,331, Cl. 427-536.000.

Milstein, Sam J., to Emisphere Technologies Inc. Carbon-substituted diketopiperazine delivery systems. 6,331,318, Cl. 424-490.000.

Mimura, Toshihiko: *See*—
Makita, Hidehisa; Mimura, Toshihiko; Mori, Masahiro; Inoue, Yuji; Shiomi, Satoru; Komori, Ayako; Nagao, Yoshitaka; Sasaoka, Makoto; and Itoyama, Shigenori, 6,331,671, Cl. 136-244.000.

Minami, Akira; and Nanba, Yoshiyuki, to Fujitsu Limited. Optical storage apparatus and recording and reproducing method of optical storage medium. 6,331,966, Cl. 369-13.000.

Minato, Tadaharu: *See*—
Takahashi, Hideki; Nishihara, Hidenori; Harada, Masana; and Minato, Tadaharu, 6,331,466, Cl. 438-268.000.

Minebea Co., Ltd.: *See*—
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Minemoto, Hitoshi: *See*—
Yakushiji, Toru; Mizoguchi, Tadashi; Suetsucu, Junichi; Minemoto, Hitoshi; Takemoto, Hitoshi; Shima, Kazuo; and Hagiwara, Yoshihiro, 6,331,046, Cl. 347-55.000.

Mino, Shuji: *See*—
Koga, Masaki; Suzuki, Nobutaka; Saitoh, Hitoshi; Oyamada, Kenshiro; Tokuhara, Koki; Mino, Shuji; Ishigaki, Naoyuki; and Yamamoto, Hitoshi, 6,331,214, Cl. 148-101.000.

Minolta Co., Ltd.: *See*—
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Hatano, Takuji; and Okada, Masakazu, 6,331,881, Cl. 349-86.000.
Kuno, Takatsugu, 6,331,900, Cl. 358-1.900.
Masazumi, Naoki; Kobayashi, Nobuyuki; Okada, Masakazu; Hashimoto, Kiyofumi; and Hatano, Takuji, 6,331,884, Cl. 349-156.000.
Sawada, Kenichi; and Ishikawa, Atsushi, 6,332,045, Cl. 382-272.000.
Sawai, Yasumasa; Ohta, Takashi; Mushiake, Nobuo; Nagata, Hideki; and Ohzawa, Soh, 6,331,879, Cl. 349-9.000.
Yoshida, Ryuichi; and Okamoto, Yasuhiro, 6,331,747, Cl. 310-313.00R.

Minor, James Craig: *See*—
Livengood, Bryan Patrick; Minor, James Craig; Moore, Michael Thomas; Olson, John Melvin; Piffarerio, Minerva; and Ting, Vincent Wen-Hwa, 6,331,372, Cl. 430-108.800.

Mioskowski, Charles: *See*—
Decor, Rachel; Mioskowski, Charles; Schmutz, Marc; and Wagner, Alain, 6,331,434, Cl. 435-458.000.

Misium, George R.; and Hattangady, Sunil V., to Texas Instruments Incorporated. Nitridation for split gate multiple voltage devices. 6,331,492, Cl. 438-762.000.

Mitchell, Andrew J.; Bergman, Richard G.; and Kredo, Thomas J., to Nortel Networks Limited. System and method for downloading internet based information to an ADSI phone slot. 6,332,020, Cl. 379-93.250.

Mitchell, David John; and Kelly, Peter Yates, to DuPont Canada Inc. Grafting of monomers onto polyolefins in presence of organic peroxides. 6,331,595, Cl. 525-263.000.

Mitchell, Everett Lee; and Mitchell, Jed D., to Elward Systems Corporation. Method and apparatus for erecting wall panels. 6,330,772, Cl. 52-235.000.

Mitchell, Gary F. Pulse wave velocity measuring device. 6,331,162, Cl. 600-485.000.

Mitchell, Jaime Tadeo: *See*—
Marenco, Alvaro Luis; and Mitchell, Jaime Tadeo, 6,331,988, Cl. 370-510.000.

Mitchell, Jed D.: *See*—
Mitchell, Everett Lee; and Mitchell, Jed D., 6,330,772, Cl. 52-235.000.

Mitchell, Robin Marie: *See*—
Beck, Christopher Clemmett Macleod; Berke, Jonathan Michael; Johnstone, Joel A; Mitchell, Robin Marie; Powers, James Karl; Sidell, Mark Franklin; and Knuff, Charles Dazler, 6,332,154, Cl. 709-204.000.

MiTek Holdings, Inc.: *See*—
Olden, Marc; and Jin, Kathy Liuhui, 6,330,963, Cl. 227-152.000.

Mitra, Debasis; Morrison, John A.; and Ramakrishnan, Kajamalai Gopalaswamy, to Lucent Technologies Inc. Method for resource allocation and routing in multi-service virtual private networks. 6,331,986, Cl. 370-468.000.

Mitra, Sanjit K.: *See*—
Manjunath, B. S.; Chae, Jong Jin; Mukherjee, Debargha; and Mitra, Sanjit K., 6,332,030, Cl. 382-100.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
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Ogushi, Tetsurou; Murakami, Masaaki; Yao, Akira; Okamoto, Takeshi; Masumoto, Hiromitsu; and Yamakage, Hisaaki, 6,330,907, Cl. 165-104.260.
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Ooishi, Tsukasa; Tomishima, Shigeki; and Shimano, Hiroki, 6,331,956, Cl. 365-200.000.
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Takahashi, Hideki; Nishihara, Hidenori; Harada, Masana; and Minato, Tadaharu, 6,331,466, Cl. 438-268.000.
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Mitsubishi Heavy Industries, Ltd.: *See*—
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Mitsui Chemicals, Inc.: *See*—
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Katsuta, Hiroyuki; Ishii, Seiichi; Tomiya, Kanji; and Kodaka, Kenji, 6,331,639, Cl. 549-69.000.

Mitsumune, Shinji: *See*—
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Mitsuta, Naoki: *See*—
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Miura, Hideo: *See*—
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Miyachi, Hiroshi: *See*—
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Miyahara, Akiko: *See*—
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Miyake, Toshihiko: *See*—
Okada, Hidetoshi; Miyake, Toshihiko; and Miyoshi, Sotsuo, 6,330,880, Cl. 123-568.200.

Miyamoto, Hidenori; Imura, Yoshio; Kato, Minoru; Ohishi, Sueyuki; Terui, Nobuhiko; and Amanuma, Tatsuo, to Nikon Corporation. Camera with vibration compensation device varying the compensating action in accordance with the focal length of a lens and the distance to the subject. 6,332,060, Cl. 396-55.000.

Miyamoto, Junichi, to Kabushiki Kaisha Toshiba. Nonvolatile semiconductor memory device and method for using the same. 6,331,960, Cl. 365-219.000.

Miyamoto, Masahiro; Kimura, Katsuhiko; and Aoyama, Taizo, to Kaneka Corporation. Cycloolefin copolymer resin composition and process for preparing the same. 6,331,591, Cl. 525-70.000.

Miyamoto, Shigeru; Nishida, Yasunari; Kawagoe, Takumi; and Nishiumi, Satoshi, to Nintendo Co., Ltd. Video game system and method with enhanced three-dimensional character and background control. 6,331,146, Cl. 463-32.000.

Miyamoto, Takaaki, to Sony Corporation. Method of producing semiconductor device. 6,331,485, Cl. 438-653.000.

Miyanaga, Akiharu: *See*—
Yamazaki, Shunpei; Ohtani, Hisashi; Miyanaga, Akiharu; and Teramoto, Satoshi, 6,331,457, Cl. 438-166.000.
Yamazaki, Shunpei; Teramoto, Satoshi; Koyama, Jun; and Miyanaga, Akiharu, 6,331,475, Cl. 438-479.000.

Miyano, Yasusada: *See*—
Teru, Suehachi; Miyano, Yasusada; Akita, Noboru; Otsuka, Kenji; and Shimada, Takashi, 6,331,281, Cl. 423-237.000.

Miyashita, Ken, to Sony Corporation. Display control apparatus display control method and presentation medium. 6,331,853, Cl. 345-427.000.

Miyauchi, Yuji: *See*—
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Miyawaki Inc.: *See*—
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Miyawaki, Tetsuyuki: *See*—
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Miyazaki, Sho; and Ichioka, Tetsuo, to Autonetworks Technologies Ltd.; Sumitomo Wiring Systems, Ltd.; and Sumitomo Electric Industries, Ltd. Waterproof connector. 6,331,124, Cl. 439-587.000.

Miyazaki, Tetsuya; Edagawa, Noboru; and Yamamoto, Shu, to Kokusai Denshin Denwa Kabushiki Kaisha. Multi-wavelength light source and discrete-wavelength-variable light source. 6,331,907, Cl. 359-127.000.

Miyazaki, Yoshito: *See*—
Satoyoshi, Tsutomu; Amano, Kenji; Ito, Hiromichi; and Miyazaki, Yoshito, 6,331,754, Cl. 315-111.510.

Miyazawa, Naoyuki, to Fujitsu Quantum Devices Limited. Bias circuit for control input of power transistor. 6,331,799, Cl. 327-538.000.

Miyazawa, Yasunao: *See*—
Akamine, Shoko; Miyazawa, Yasunao; and Maruoka, Shigenobu, 6,331,071, Cl. 366-325.920.

Miyazono, Kohei; ten Dijke, Peter; Franzen, Petra; Yamashita, Hidetoshi; and Heldin, Carl-Henrik, to Ludwig Institute for Cancer Research. Isolated nucleic acid molecules which encode activin-receptor like kinases, expression vectors and cells containing these. 6,331,621, Cl. 536-232.000.

Miyoshi, Sotsuo: *See*—
Okada, Hidetoshi; Miyake, Toshihiko; and Miyoshi, Sotsuo, 6,330,880, Cl. 123-568.200.

Mizoguchi, Tadashi: *See*—
Yakushiji, Toru; Mizoguchi, Tadashi; Suetsucu, Junichi; Minemoto, Hitoshi; Takemoto, Hitoshi; Shima, Kazuo; and Hagiwara, Yoshihiro, 6,331,046, Cl. 347-55.000.

Mizuguchi, Kenji: *See*—

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Mizuno, Akira; Shibata, Makoto; Kamei, Tomoe; Fukami, Harukazu; and Inomata, Norio, to Suntory Limited. Pyrrolothiazine and pyrrolothiazepine compounds having serotonin-2 receptor antagonistic and alpha-1-blocking action. 6,331,623, Cl. 540-484.000.

Mizutani, Mami: *See*—
Yamamoto, Hajime; Tanaka, Shigeru; Shigeta, Masaaki; Mizutani, Mami; Monden, Yukitaka; and Uchino, Hiroshi, 6,331,765, Cl. 323-210.000.

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Moden, Walter L.: *See*—
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Moessner, Ellen: *See*—
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Mohn, Kenneth L.: *See*—
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Molano, Rafael; Gianfagna, Lawrence; Roth, Douglas E.; Kurtek, Ed; Goulet, Alan; Symonds, Robert D.; Gill, Robert Bradley; Biwer, William; Walsh, Mike; Welsh, Julie; Gebhard, Richard; and Spice-Kopischke, Joel, to Diebold Incorporated. Electronic purse card value system card security method. 6,330,978, Cl. 235-492.000.

Molecular Metallurgy, Inc.: *See*—
Meckel, Nathan K., 6,330,750, Cl. 30-350.000.

Molex Incorporated: *See*—
Grois, Igor; Chen, Wenzong; and Matasek, Jeffrey A., 6,331,079, Cl. 385-53.000.

Mollet, Beat; Germond, Jacques Edouard; and Lapierre, Luciane, to Nestec S.A. Mobile genetic elements as tools for genetic modification of *L. delbrueckii* or *L. helveticus*. 6,331,140, Cl. 453-476.000.

Molnar, Barbara: *See*—
Rydbeck, Nils; Molnar, Barbara; Guey, Jiann-Ching; Khayrallah, Ali; and Koilpillai, R. David, 6,332,006, Cl. 375-262.000.

Molnar, Linda Katherine, to Rohm and Haas Company. MBS impact modifiers. 6,331,580, Cl. 523-201.000.

Monahan, Larry A.: *See*—
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Monden, Yukitaka: *See*—
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Monia, Brett P.; Gaarde, William A.; and Wancewicz, Edward, to ISIS Pharmaceuticals, Inc. Antisense inhibition of tert expression. 6,331,399, Cl. 435-6.000.

Monk, David T: *See*—
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Monsma, Douwe Johannes; Parkin, Stuart Stephen Papworth; and Scheuerlein, Roy Edwin, to International Business Machines Corporation. Magnetic random access memory using a series tunnel element select mechanism. 6,331,944, Cl. 365-171.000.

Montana, John Gary: *See*—
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Montanini, Pietro: *See*—
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Montgomeory, R. Eric: *See*—
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Montgomery, R. Eric, to Montgomeory, R. Eric; and Idex Dental Sciences, Inc. Tooth bleaching compositions. 6,331,292, Cl. 424-53.000.

Montgomery, Robert H., Jr., to Kennametal PC Inc. Cutting tool holder assembly with press fit. 6,331,035, Cl. 299-106.000.

Monti-Bloch, Luis: *See*—
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Moon, Chouhwan: *See*—
Lence Barreiro, Juan A.; Huang, Harry Z.; Moon, Chouhwan; Freeland, Gary L.; and Mashiak, Robert H., 6,330,936, Cl. 187-393.000.

Moore, Anthony James, to BCF Designs Limited. Method and apparatus for testing frequency-dependent electrical circuits. 6,331,779, Cl. 324-619.000.

Moore, Michael Thomas: *See*—
Livengood, Bryan Patrick; Minor, James Craig; Moore, Michael Thomas; Olson, John Melvin; Piffarerio, Minerva; and Ting, Vincent Wen-Hwa, 6,331,372, Cl. 430-108.800.

Moore, Robert J.: *See*—
Van Hook, Timothy J.; Cheng, Howard H.; DeLaurier, Anthony P.; Gossett, Carroll P.; Moore, Robert J.; Shepard, Stephen J.; Anderson, Harold S.; Princen, John; Doughty, Jeffrey C.; Pooley, Nathan F.; Sheppard, Byron; Takeda, Genyo; and Kato, Shuhei, 6,331,856, Cl. 345-503.000.

Moran, Thomas P.; van Melle, William J.; Kurtenbach, Gordon P.; and Chiu, Patrick, to Xerox Corporation. Computer controlled display system using a graphical replay device to control playback of temporal data representing collaborative activities. 6,332,147, Cl. 707-500.100.

More, Georgina: *See*—
Oglesbee, John Wendell; Burns, Arthur G.; and More, Georgina, 6,331,764, Cl. 320-136.000.

Moretta, Jon C.; and Subramanian, Murugesan, to Kellogg Brown & Root, Inc. Petroleum resid pelletization. 6,331,245, Cl. 208-39.000.

Morey, Frank: *See*—
Holce, Kent; Morey, Frank; Rupert, Matt; and Bowman, Mark, 6,331,821, Cl. 340-635.000.

Morgan Construction Company: *See*—
Shore, T. Michael; and Puchovsky, Melicher, 6,331,219, Cl. 148-589.000.

Morgan, David L: *See*—
Kouwenberg, Tineke C; Kouwenberg, Robert J; Petersen, Soren; Wall, Michael T; Morgan, David L; and Loughnane, Cathal, 6,330,808, Cl. 62-372.000.

Morgan, George Richard, to Accentus PLC. Formation of monodisperse particles. 6,331,290, Cl. 424-46.000.

Morgan, Ian: *See*—
Blish, Richard C., II; Hatchard, Colin; and Morgan, Ian, 6,331,735, Cl. 257-777.000.

Morgner, Dietmar: *See*—
Friess, Werner; Jahnel, Harald; Vogt, Christian; and Morgner, Dietmar, 6,331,019, Cl. 285-49.000.

Mori, Masahiro: *See*—
Makita, Hidehisa; Mimura, Toshihiko; Mori, Masahiro; Inoue, Yuji; Shiomi, Satoru; Komori, Ayako; Nagao, Yoshitaka; Sasaoka, Makoto; and Itoyama, Shigenori, 6,331,671, Cl. 136-244.000.

Mori, Takahiro: *See*—
Kataoya, Ichiro; Mori, Takahiro; Yamada, Satoru; Shiotsuka, Hidenori; and Komori, Ayako, 6,331,673, Cl. 136-259.000.

Moriceau, Jacques, to Aluminium Pechiney; and Pechiney Rhenalu. Inert tank for treating oxidizable liquid metal. 6,331,269, Cl. 266-207.000.

Morimoto, Yoshiaki: *See*—
Kawasaki, Kenji; Tanaka, Tetsuo; Morimoto, Yoshiaki; Nitta, Kunihisa; and Tanaka, Kimio, 6,332,145, Cl. 707-104.000.

Morinaga Milk Industry Co., Ltd.: *See*—
Tomita, Mamoru; Sotoyama, Kazuyoshi; Watanabe, Ryozo; Mizuguchi, Kenji; Shidara, Hideo; Wakao, Shoji; Hattori, Masanori; and Motoyoshi, Nobuyuki, 6,331,324, Cl. 426-634.000.

Morishita, Fukashi: *See*—
Kobayashi, Mako; and Morishita, Fukashi, 6,331,962, Cl. 365-226.000.

Morishita, Mikio: *See*—
Hattori, Katsuya; Nakamura, Akio; and Morishita, Mikio, 6,331,203, Cl. 106-31.130.

Morita, Kiyoo; Takahashi, Daisuke; Shiga, Hideaki; Ishihara, Yusuke; and Tsuyuki, Seiji, to Fuji Photo Film Co., Ltd. Magnetic tape cartridge with elastic member for removably holding leader pin. 6,331,922, Cl. 360-132.000.

Morita, Masahiko: *See*—
Toyooka, Takaaki; Yorifuji, Akira; Nishimori, Masanori; Itadani, Motoaki; Hashimoto, Yuji; Okabe, Takatoshi; Tanaka, Nobuki; Kanayama, Taro; Furukimi, Osamu; Morita, Masahiko; Hira, Takaaki; and Matsuoka, Saiji, 6,331,216, Cl. 148-320.000.

Morita, Tetsuya, to Ricoh Company, Ltd. Printing system and method for avoiding unnecessarily repetitive operations while preparing print data. 6,331,896, Cl. 358-1.180.

Morita, Tomoko: *See*—
Kasahara, Mitsuhiro; Ishikawa, Yuichi; and Morita, Tomoko, 6,331,843, Cl. 345-63.000.

Moriya, Mika; Izui, Hiroshi; Ono, Eiji; Matsui, Kazuhiko; Ito, Hisao; and Hara, Yoshihiko, to Ajinomoto Co., Inc. L-glutamic acid-producing bacterium and method for producing L-glutamic acid. 6,331,419, Cl. 435-110.000.

Moriyama, Shoichi: *See*—
Ozawa, Toshiaki; Moriyama, Shoichi; and Aimura, Hiroshi, 6,330,742, Cl. 29-603.060.

Morley, Michael C; Sturgess, Ian C. C; and Gardner, David S, to British Telecommunications public limited company. Telecommunications network with store for data associated with an area code. 6,332,019, Cl. 379-88.230.

Morohoshi, Shinichi; and Tsuru, Ryuji, to Honda Giken Kogyo Kabushiki Kaisha. Engine generator unit. 6,331,740, Cl. 290-1.00A.

Morris, Alan C.; Mabrito, Craig A.; and Roberts, Matthew R., to Dentech, L.L.C. Automated tooth shade analysis and matching system. 6,331,113, Cl. 433-215.000.

Morris, Daniel Gordon: *See*—
Scott, Stephen Daniel; and Morris, Daniel Gordon, 6,331,838, Cl. 343-715.000.

Morrison, John A.: *See*—

Mitra, Debasis; Morrison, John A.; and Ramakrishnan, Kajamalai Gopalaswamy, 6,331,986, Cl. 370-468.000.

Morton, Harmon Lindsay: *See*—
Steber, Charles Evan; Morton, Harmon Lindsay; and McLeroy, Jacob Tussey, 6,331,110, Cl. 431-352.000.

Moss, John Wesley: *See*—
Latter, Teresa Farias; Moss, John Wesley; McBlain, Thomas Joseph; Maciejewski, James Thomas; and Hardzinski, Mary Louise, 6,332,021, Cl. 379-142.010.

Moss, Leslie: *See*—
Grandcolas, Michael L.; Anthony, Wendell W.; Law, Patrick; Moss, Leslie; Petach, Teresa A.; and Tompkins, Peter, 6,332,131, Cl. 705-35.000.

Mostello, Robert Anthony. Method and apparatus for producing nitrogen from air by cryogenic distillation. 6,330,812, Cl. 62-643.000.

Motorola, Inc.: *See*—
Goldberg, Steven Jeffrey, 6,331,817, Cl. 340-573.100.
Harris, Jeffrey Martin; Woodward, Ernest Earl; and Borgstahl, Ronald W., 6,331,972, Cl. 370-313.000.
Johnson, Christopher L.; Flondro, Daniel S.; and Schmeltz, Timothy J., 6,332,072, Cl. 455-277.100.
Naji, Peter K.; DeHerrera, Mark; and Durlam, Mark, 6,331,943, Cl. 365-158.000.
Oglesbee, John Wendell; Burns, Arthur G.; and More, Georgina, 6,331,764, Cl. 320-136.000.
Smith, Paul F., 6,331,834, Cl. 341-155.000.

Motoyoshi, Nobuyuki: *See*—
Tomita, Mamoru; Sotoyama, Kazuyoshi; Watanabe, Ryozo; Mizuguchi, Kenji; Shidara, Hideo; Wakao, Shoji; Hattori, Masanori; and Motoyoshi, Nobuyuki, 6,331,324, Cl. 426-634.000.

Mougenot, Patrick: *See*—
Philippo, Christophe; Mougenot, Patrick; Defosse, Gérard; Braun, Alain; and Bovy, Philippe, 6,331,549, Cl. 514-311.000.

Mount, David J., Sr.: *See*—
Dykstra, Jerald P.; Mount, David J., Sr.; Skinner, Wesley J.; and Kirkpatrick, Allen R., 6,331,227, Cl. 156-345.100.

Moussa, Adel M.: *See*—
Brugnara, Carlo; Halperin, Jose; Bellot, Emile M., Jr.; Froimowitz, Mark; Lombardy, Richard John; Clifford, John J.; Gao, Ying-Duo; Haidar, Reem M.; Kelleher, Eugene W.; Kher, Falguni M.; Moussa, Adel M.; Sachdeva, Yesh P.; Sun, Minghua; and Taft, Heather N., 6,331,564, Cl. 514-520.000.

Mousseau, Rick: *See*—
Desmond, John P.; McCormack, Sean; Lawlor, Patrick J.; and Mousseau, Rick, 6,331,066, Cl. 362-494.000.

Mower CHF Treatment Irrevocable Trust: *See*—
Mower, Morton M., 6,332,096, Cl. 607-9.000.

Mower, Morton M., to Mower CHF Treatment Irrevocable Trust. Augmentation of electrical conduction and contractility by biphasic cardiac pacing. 6,332,096, Cl. 607-9.000.

Moya, Emmanuel G. Protection of downwell pumps from sand entrained in pumped fluids. 6,330,915, Cl. 166-265.000.

MTD Products Inc: *See*—
Hawk, Homer J.; Setele, Thomas; and Brookhart, Craig, 6,330,822, Cl. 73-40.700.

Mucciariello, Gennaro: *See*—
Ng, John S.; Wang, Ping T.; Baez, Julio A.; Liu, Chin; Anderson, Dennis K.; Lawson, Jon P.; Erb, Bernhard; Wieczorek, Joseph; Mucciariello, Gennaro; Vanzanella, Fortunato; Kunda, Sastry A.; Letendre, Leo J.; Pozzo, Mark J.; Sing, Yuen-Lung L.; and Yonan, Edward E., 6,331,622, Cl. 540-41.000.

Mukawa, Hiroshi, to Sony Corporation. Virtual image optical system. 6,331,916, Cl. 359-630.000.

Mukherjee, Debargha: *See*—
Manjunath, B. S.; Chae, Jong Jin; Mukherjee, Debargha; and Mitra, Sanjit K., 6,332,030, Cl. 382-100.000.

Mullaney, Lawrence: *See*—
Sebborn, Martin; and Mullaney, Lawrence, 6,332,047, Cl. 382-298.000.

Mullenbach, Guy T.: *See*—
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Muller, Joop Henk: *See*—
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Muller, Paul: *See*—
Baumgartner, Albert; Sahli, Richard; Gasser, Daniel; Muller, Paul; and Untersander, Walter, 6,330,841, Cl. 81-57.370.

Munakata, Takeo; Kikuchi, Naoshi; Shinohara, Takashi; Banse, Hideo; Kaneko, Takao; Akasaka, Hiroji; Aida, Yukikatsu; Shimokura, Naoyoshi; Ishikubo, Yuji; Okada, Tetsuya; and Suzuki, Tamezo, to Furukawa Electric Co., Ltd., The; and Kansai Electric Power Co., Inc., The. Overhead wire. 6,331,677, Cl. 174-128.100.

Munnerlyn, Audrey; and Caudle, George, to VISX, Incorporated. Multiple beam laser sculpting system and method. 6,331,177, Cl. 606-5.000.

Munro, Liliana; and Linnartz, Olaf. Sandbox with attachable cover. 6,331,147, Cl. 472-126.000.

Müntnich, Leo; and Grell, Karl-Ludwig, to Ina Wälzlager Schaeffler OHG. Method of making formed bodies. 6,330,748, Cl. 29-898.067.

Murai, Taeko; Matsumoto, Shuzo; Fujii, Mitsumi; Nakano, Tomoaki; Makita, Hideyuki; Ohta, Yoshihisa; Kakuda, Shinichi; and Hirota, Tetsuro, to Ricoh Company, Ltd. Ink jet printing apparatus. 6,331,052, Cl. 347-68.000.

Murakami, Masaaki: *See*—
Ogushi, Tetsurou; Murakami, Masaaki; Yao, Akira; Okamoto, Takeshi; Masumoto, Hiromitsu; and Yamakage, Hisaaki, 6,330,907, Cl. 165-104.260.

Murali, Venkatesan: *See*—
Cook, Duane; Murali, Venkatesan; Ramalingam, Suresh; and Vodrahalli, Nagesh, 6,331,446, Cl. 438-106.000.

Muramatsu, Fumimasa: *See*—
Kitahara, Shun; Muramatsu, Fumimasa; and Umezawa, Shigeki, 6,331,358, Cl. 428-447.000.

Muramatsu, Hiroyuki; Kuwahara, Seiji; Akase, Atsuya; Kawaguchi, Kouji; and Sato, Tatsuru, to Seiko Instruments Inc. Ink recording head and ink injecting method using ink recording head. 6,331,047, Cl. 347-55.000.

Muraoka, Tsutomu; Wada, Kazuo; and Kitagawa, Kozo, to Shimano, Inc. Bracket assembly, especially for use as a magnetic device in a monitoring device. 6,331,771, Cl. 324-174.000.

Murata Manufacturing Co., Ltd.: *See*—
Kobayashi, Fumiyuki; Kawabata, Kazuaki; Ueno, Yasushi; and Yoneda, Yasunobu, 6,331,932, Cl. 361-321.200.
Kuroda, Yoichi; Naito, Yasuyuki; Hori, Haruo; Kondo, Takanori; and Asakura, Kyoshin, 6,331,930, Cl. 361-306.300.
Mikami, Shigeyuki; Hiratsuka, Toshiro; and Sonoda, Tomiya, 6,331,808, Cl. 333-134.000.
Takakuwa, Ikuo; Tanizaki, Toru; and Hiratsuka, Toshiro, 6,331,809, Cl. 333-135.000.

Murgita, Robert A., to McGill University. Expression and purification of cloned human alpha-fetoprotein. 6,331,611, Cl. 530-350.000.

Murphy, Harold R.: *See*—
Aravantinos, Dimitrios; Aravantinos, Katina; and Murphy, Harold R., 6,330,888, Cl. 135-66.000.

Murphy, Michael P.; and Smith, Robin A. J., to University of Otago. Mitochondrially targeted antioxidants. 6,331,532, Cl. 514-100.000.

Murray, Beth L.: *See*—
Celeste, Anthony J.; and Murray, Beth L., 6,331,612, Cl. 530-350.000.

Mushiake, Nobuo: *See*—
Sawai, Yasumasa; Ohta, Takashi; Mushiake, Nobuo; Nagata, Hideki; and Ohzawa, Soh, 6,331,879, Cl. 349-9.000.

Myers, Kenneth J., to Myers, Kenneth J.; and Greenberg, Edward. Lighting element including light emitting diodes, microprism sheet, reflector, and diffusing agent. 6,331,915, Cl. 359-599.000.

Myers, Rene L.: *See*—
Bloch, William; Werner, William E.; Egholm, Michael; and Myers, Rene L., 6,331,618, Cl. 536-25.400.

Myers, W. Neill: *See*—
Cornelius, Charles S.; Counts, Richard H.; Myers, W. Neill; Lackey, Jeffrey D.; Peters, Warren; Shadoan, Michael D.; Sparks, David L.; and Lawrence, Timothy W., 6,330,792, Cl. 60-257.000.

Myllymäki, Matti, to IST International Security Technology Oy. Automatic control system for security apparatus based on the presence of a user. 6,331,816, Cl. 340-540.000.

Myriad Genetics, Inc.: *See*—
Wong, Alexander K. C.; Teng, David H. -F.; and Tavtigian, Sean V., 6,331,614, Cl. 536-23.500.

Nag, Bishwajit: *See*—
Neogi, Partha; Nag, Bishwajit; Medicherla, Satyanarayana; and Dey, Debendranath, 6,331,633, Cl. 548-183.000.

Nagae, Yoshiharu: *See*—
Kitajima, Masaaki; Tsumura, Makoto; Mikami, Yoshiro; Funahata, Katsuyuki; Nagae, Yoshiharu; Wakui, Yoko; Saito, Ryuichi; Matsui, Makoto; and Nemoto, Fumiaki, 6,331,845, Cl. 345-88.000.

Nagafuji, Toshiaki: *See*—
Esaki, Toru; Makino, Toshihiko; Nishimura, Yoshikazu; and Nagafuji, Toshiaki, 6,331,553, Cl. 514-352.000.

Nagai, Yutaka: *See*—
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Nagami, Kenzoh: *See*—
Nakahara, Koichi; Fujii, Takahisa; Miki, Wataru; Nagami, Kenzoh; and Arai, Kunio, 6,331,320, Cl. 424-725.000.

Nagano, Masatoshi; and Iizuka, Toshimi, to Canon Kabushiki Kaisha. Image reading apparatus. 6,331,886, Cl. 355-75.000.

Nagao, Yoshitaka: *See*—
Makita, Hidehisa; Mimura, Toshihiko; Mori, Masahiro; Inoue, Yuji; Shiomi, Satoru; Komori, Ayako; Nagao, Yoshitaka; Sasaoka, Makoto; and Itoyama, Shigenori, 6,331,671, Cl. 136-244.000.

Nagareda, Katsushi: *See*—
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Nagata, Hideki: *See*—
Sawai, Yasumasa; Ohta, Takashi; Mushiake, Nobuo; Nagata, Hideki; and Ohzawa, Soh, 6,331,879, Cl. 349-9.000.

Nagl, Alan Thomas; and Freeman, John Jay, to Seagate Technology LLC. Method and apparatus for subjecting a device to rotational vibration. 6,330,828, Cl. 73-668.000.

Naito, Yasuyuki: *See*—
Kuroda, Yoichi; Naito, Yasuyuki; Hori, Haruo; Kondo, Takanori; and Asakura, Kyoshin, 6,331,930, Cl. 361-306.300.

Naji, Peter K.; DeHerrera, Mark; and Durlam, Mark, to Motorola, Inc. MTJ MRAM series-parallel architecture. 6,331,943, Cl. 365-158.000.

Naka, Masayoshi: *See*—
Takahashi, Koji; Shirota, Yuichi; Ban, Koichi; Sugi, Hikaru; Niimi, Yasuhiko; Kishita, Hiroshi; Yamanaka, Yasushi; and Naka, Masayoshi, 6,330,909, Cl. 165-202.000.

Nakahara, Koichi; Fujii, Takahisa; Miki, Wataru; Nagami, Kenzoh; and Arai, Kunio, to Suntory Limited. Process for producing aromatic compounds by supercritical water treatment. 6,331,320, Cl. 424-725.000.

Nakai, Hiroto: *See*—
Shibata, Noboru; Tanaka, Tomoharu; Nakai, Hiroto; Yamamura, Toshio; and Fujimura, Susumu, 6,331,945, Cl. 365-185.030.

Nakajima, Chikara: *See*—
Terasaki, Takeshi; Miura, Hideo; Nakajima, Chikara; and Kitano, Makoto, 6,331,730, Cl. 257-688.000.

Nakajima, Hiroomi; and Sakamoto, Toshihiro, to Kabushiki Kaisha Toshiba. Semiconductor device and method of fabricating the same. 6,331,727, Cl. 257-587.000.

Nakajima, Hiroshi; and Shimogama, Shigeru, to Matsushita, Electric Industrial Co., Ltd. Robot controller. 6,332,102, Cl. 700-245.000.

Nakajima, Shozi: *See*—
Okazaki, Iwao; Nakamori, Yukari; Nakajima, Shozi; Kubota, Akira; and Shirakawa, Yuri, 6,331,344, Cl. 428-141.000.

Nakajima, Tomonari: *See*—
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Nakajima, Yuichi: *See*—
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Nakamori, Yukari: *See*—
Okazaki, Iwao; Nakamori, Yukari; Nakajima, Shozi; Kubota, Akira; and Shirakawa, Yuri, 6,331,344, Cl. 428-141.000.

Nakamura, Akio: *See*—
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Nakamura, Gerald R.: *See*—
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Nakamura, Karl S.: *See*—
Ducaroir, Francois; Nakamura, Karl S.; and Jenkins, Michael O., 6,331,999, Cl. 375-226.000.

Nakamura, Keiichi; Kaneko, Tomihisa; and Ogura, Kazunao, to Combi Corporation. Wet tissue warmer and tissue lifting plate. 6,331,696, Cl. 219-386.000.

Nakamura, Norimasa: *See*—
Imashiro, Yasuo; Tomita, Hideshi; Itoh, Takahiko; and Nakamura, Norimasa, 6,331,226, Cl. 156-330.000.

Nakamura, Shun; Nishimaki, Yuichi; and Yamanaka, Eiji, to Bridgestone Corporation. Pneumatic tire containing a vulcanization accelerator. 6,330,897, Cl. 152-537.000.

Nakamura, Yutaka; Koezuka, Tetsuo; Komoriya, Hitoshi; and Hirahara, Takao, to Fujitsu Limited. Apparatus and method for assembling semiconductor device and semiconductor device thus fabricated. 6,331,891, Cl. 356-401.000.

Nakano, Hiroki: *See*—
Chaudhari, Praveen; Galligan, Eileen Ann; Doyle, James Patrick; Lacey, James Andrew; Lien, Shui-Chih Alan; Nakano, Hiroki; and Lu, Minhua, 6,331,381, Cl. 430-320.000.

Nakano, Koichi: *See*—
Hiroshima, Tatsuo; Nakano, Koichi; Harada, Muneo; Matsumoto, Toshiyuki; and Hirota, Yoshihiro, 6,331,780, Cl. 324-684.000.

Nakano, Tomoaki: *See*—
Murai, Taeko; Matsumoto, Shuzo; Fujii, Mitsumi; Nakano, Tomoaki; Makita, Hideyuki; Ohta, Yoshihisa; Kakuda, Shinichi; and Hirota, Tetsuro, 6,331,052, Cl. 347-68.000.

Nakao, Tomoaki, to Sharp Kabushiki Kaisha. Differential amplifier, operational amplifier employing the same, and liquid crystal driving circuit incorporating the operational amplifier. 6,331,846, Cl. 345-96.000.

Nakasai, Takashi; and Ohashi, Junichi, to Toyo Tire & Rubber Co., Ltd. Radial-ply tire with specified belt structure. 6,330,896, Cl. 152-523.000.

Nakashima, Moriyuki: *See*—
Shiraishi, Kazunari; Wakisako, Hitoshi; Maruyama, Yoshinaga; Yano, Kyoji; and Nakashima, Moriyuki, 6,331,887, Cl. 356-3.030.

Nakata, Kazuhiro: *See*—
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Nakata, Yoshie; Sugitani, Hiroshi; Inamoto, Tadayoshi; Kimura, Makiko; and Koyama, Shuji, to Canon Kabushiki Kaisha. Liquid ejecting head and method in which a movable member is provided between flow paths, one path joining a common chamber and ejection orifice, the other, having a heat generating element. 6,331,050, Cl. 347-65.000.

Nakatsuji, Fumio; and Hashimoto, Yuichi, to Matsushita Electrical Industrial Co., Ltd. High-speed error correcting apparatus with efficient data transfer. 6,332,206, Cl. 714-755.000.

Nakatsuji, Yoshihiro: *See*—
Sugimoto, Hiroyuki; Nakatsuji, Yoshihiro; and Hozumi, Hidetake, 6,331,360, Cl. 428-523.000.

Nakayasu, Tetsuo, to Research Institute of Advanced Material Gas-Generator, Ltd. High performance ceramic matrix composite. 6,331,496, Cl. 501-95.200.

Nakazawa, Makoto; Orimoto, Masaaki; Nishimura, Toru; and Itoh, Atsushi, to Fuji Photo Film Co., Ltd. Order apparatus for print including recording order information on developed film, a card reader for reading the order information, or confirming the order information. 6,331,903, Cl. 358-487.000.

Nalco Chemical Company: *See*—
Wong Shing, Jane B.; Maltesh, Chidambaram; and Hurlock, John R., 6,331,229, Cl. 162-168.300.

Nally, John F., Jr.; Peterson, William A., Jr.; Miandoab, Farid H.; and Sayar, Hamid, to Siemens Automotive Corporation. Fuel injector with turbulence generator for fuel orifice. 6,330,981, Cl. 239-533.120.

Nam, Hyo-rak: *See*—
Lee, Jueng-gil; Lee, Jung-ho; and Nam, Hyo-rak, 6,331,443, Cl. 438-30.000.

Nanba, Yoshiyuki: *See*—
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Nanogen, Inc.: *See*—
Ackley, Donald E.; and Graham, Scott O., 6,331,274, Cl. 422-68.100.

Narizuka, Satoru; and Katsuhara, Yutaka, to Central Glass Company, Limited. Process for producing trifluoromethylbenzylamines. 6,331,649, Cl. 564-384.000.

Näslund, Jan: *See*—
Nordstedt, Christer; Näslund, Jan; Thyberg, Johan; Tjernberg, Lars O.; and Terenius, Lars, 6,331,440, Cl. 436-501.000.

Nathan, Ofer J.: *See*—
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National Datacom Corporation: *See*—
Wu, Chi-Kai; and Hsu, Yi-Shou, 6,332,077, Cl. 455-432.000.

National Instruments Corporation: *See*—
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National Research Council of Canada: *See*—
Janz, Siegfried; Lafontaine, Hughes; and Xu, Dan-Xia, 6,331,445, Cl. 438-57.000.
Lefebvre, Louis-Philippe; Pelletier, Sylvain; and Thomas, Yannig, 6,331,270, Cl. 419-27.000.

Naviasky, Eric H.; Hufford, Michael M.; and Lubkin, Jeremy, to Cadence Design Systems, Inc. Highly linear sigma-delta modulator having graceful degradation of signal-to-noise ratio in overload condition. 6,331,833, Cl. 341-143.000.

Navigation Technologies Corporation: *See*—
McDonough, William; Rao, Srinivasa; and Srivastava, Ashutosh, 6,330,858, Cl. 101-208.000.

Nazomi Communications, Inc.: *See*—
Patel, Mukesh K.; Kamdar, Jay; and Ranganath, V. R., 6,332,215, Cl. 717-5.000.

NCR Corporation: *See*—
Roth, Joseph D.; and Finster, Wayne D., 6,331,018, Cl. 283-81.000.

Nebolon, Joseph F.: *See*—
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NEC Corporation: *See*—
Hirota, Takuya, 6,331,959, Cl. 365-207.000.
Ito, Toshiharu, 6,332,054, Cl. 385-123.000.
Kimura, Naoto, 6,331,738, Cl. 257-787.000.
Matsui, Naoyuki, 6,331,371, Cl. 430-65.000.
Nogi, Kenichi, 6,331,795, Cl. 327-156.000.
Sasaki, Takahiro, 6,331,489, Cl. 438-745.000.
Sasaki, Teruo, 6,332,007, Cl. 375-344.000.
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Shibuya, Akinobu; and Matsui, Koji, 6,331,811, Cl. 338-308.000.
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Yakushiji, Toru; Mizoguchi, Tadashi; Suetsucu, Junichi; Minemoto, Hitoshi; Takemoto, Hitoshi; Shima, Kazuo; and Hagiwara, Yoshihiro, 6,331,046, Cl. 347-55.000.
Yamabana, Kiyoshi, 6,332,118, Cl. 704-9.000.
Yokoyama, Takashi; and Baba, Masakazu, 6,331,238, Cl. 205-135.000.
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NEC Research Institute, Inc.: *See*—
Ai, Jun; Popelek, Jan; Li, Yao; and Chen, Ray T., 6,332,051, Cl. 385-33.000.

Nedwick, Paul: *See*—
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Negev Tornado Ltd.: *See*—
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Negus, Stephen H.: *See*—
Haggerty, William T.; Andlauer, Phillip; and Negus, Stephen H., 6,331,983, Cl. 370-400.000.

Nelson, Douglas J.; Knight, James E.; and Noga, Mark C., to Knight Treatment Systems, Inc. Apparatus and method for wastewater nutrient recovery. 6,331,249, Cl. 210-610.000.

Nemoto, Fumiaki: *See*—
Kitajima, Masaaki; Tsumura, Makoto; Mikami, Yoshiro; Funahata, Katsuyuki; Nagae, Yoshiharu; Wakui, Yoko; Saito, Ryuichi; Matsui, Makoto; and Nemoto, Fumiaki, 6,331,845, Cl. 345-88.000.

Neogi, Amar N.: *See*—
Sealey, James E., II; Persinger, W. Harvey, Jr.; Luo, Mengkui; Roscelli, Vincent A.; and Neogi, Amar N., 6,331,354, Cl. 428-393.000.

Neogi, Partha; Nag, Bishwajit; Medicherla, Satyanarayana; and Dey, Debendranath, to Calyx Therapeutics Inc. Heterocyclic analogs of diphenylethylene compounds. 6,331,633, Cl. 548-183.000.

Neose Technologies, Inc.: *See*—
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Nestec S.A.: *See*—
Bautista, Derrick; and Collins-Thompson, David, 6,331,432, Cl. 435-264.000.
Mollet, Beat; Germond, Jacques Edouard; and Lapierre, Luciane, 6,331,140, Cl. 453-476.000.
Rosse, Meinrad, 6,330,850, Cl. 99-289.00R.

NetCurrents, Inc.: *See*—
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Neurogen Corporation: *See*—
Greenlee, William; Gangly, Ashit; and Wasley, Jan W. F., 6,331,629, Cl. 544-377.000.
New, Daryl C., to Micron Technology, Inc. Pre-patterned contact fill capacitor for dielectric etch protection. 6,331,442, Cl. 438-3.000.
New Focus, Inc.: *See*—
Green, Evan D. H., 6,331,892, Cl. 356-451.000.
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New Holland North America, Inc.: *See*—
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New Sound Enterprise & Musical Instrument Mfg. Co. Ltd.: *See*—
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New Transducers Limited: *See*—
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New York Air Brake Corporation: *See*—
Hawthorne, Michael J.; Nickles, Stephen K.; and Onodipe, Bolanle, 6,332,106, Cl. 701-19.000.
Newell, Harold; and Wiggins, John, to Joseph B. Willey. Apparatus and method for automatically compensating for lateral runout. 6,330,847, Cl. 82-112.000.
Newell Window Furnishings. Inc.: *See*—
Ciuca, Zazu; Woods, Patrick; Palmer, Roger; Ruggles, Brian; and Kuhar, Otto, 6,330,899, Cl. 160-170.00R.
Ng, John S.; Wang, Ping T.; Baez, Julio A.; Liu, Chin; Anderson, Dennis K.; Lawson, Jon P.; Erb, Bernhard; Wieczorek, Joseph; Mucciariello, Gennaro; Vanzanella, Fortunato; Kunda, Sastry A.; Letendre, Leo J.; Pozzo, Mark J.; Sing, Yuen-Lung L.; and Yonan, Edward E., to G.D. Searle & Co. Processes for preparation of 9, 11-epoxy steroids and intermediates useful therein. 6,331,622, Cl. 540-41.000.
Nguyen, Hien: *See*—
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Nguyen, Ken: *See*—
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NHK Spring Co Ltd: *See*—
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Nicholson, G. Randy, to AutoGas Systems, Inc. System and method of providing multiple level discounts on cross-marketed products and discounting a price-per-unit-volume of gasoline. 6,332,128, Cl. 705-14.000.
Nickell, Craig A., to Super Sack Mfg. Corp. Bulk bag for dense materials. 6,331,077, Cl. 383-119.000.
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Nieh, Benjamin B.; Pillar, John F.; Guttman, Jacob; Marchand, Bernard; and Rabie, Sameh, to Nortel Networks Limited. Dynamic generic cell rate algorithm for policing ABR traffic. 6,331,970, Cl. 370-230.000.
Nielson, Kevin W.; and Kinawi, Husam. Object-drag continuity between discontinuous touch screens of a single virtual desktop. 6,331,840, Cl. 345-1.100.
Nierlich, Franz: *See*—
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Nilsson, Ulf Tomas Weine; Alayan, Hussein Abbas; and Armantrout, Jeffrey A., to Ericsson Inc. Emergency number dialing from a fixed cellular terminal. 6,332,073, Cl. 455-404.000.
Nimons, John: *See*—
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Nintendo Co., Ltd.: *See*—
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Nippon Shokubai Co., Ltd.: *See*—
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Nishida, Shoji; Yonehara, Takao; Sakaguchi, Kiyofumi; and Iwane, Masaaki, to Canon Kabushiki Kaisha. Process for producing solar cell, process for producing thin-film semiconductor, process for separating thin-film semiconductor, and process for forming semiconductor. 6,331,208, Cl. 117-89.000.
Nishida, Yasunari: *See*—
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Nishigaki, Futoshi; and Tabata, Osamu, to Kao Corporation. Process for preparing powdery alkyl sulfates. 6,331,645, Cl. 558-39.000.
Nishihara, Hidenori: *See*—
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Kato, Shigekazu; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, 6,330,756, Cl. 34-406.000.
Nishikawa, Kazuhiro: *See*—
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Nissan Chemical Industries, Ltd.: *See*—
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NitroMed, Inc.: *See*—
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Nodera, Akio; and Mitsuta, Naoki, to Idemitsu Petrochemical Co., Ltd. Flame-retardant polycarbonate resin composition and its injection moldings. 6,331,584, Cl. 524-115.000.
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Nogi, Kenichi, to NEC Corporation. Lock determination circuit of PLL for pulling up intermediate electric potential of lock determination gate. 6,331,795, Cl. 327-156.000.
Noguchi, Hajime; and Komine, Takaya, to Showa Aircraft Industry Co., Ltd. Honeycomb structure and method for preparing the same. 6,331,340, Cl. 428-116.000.
Nohr, Ronald S.; and MacDonald, John G., to Kimberly-Clark Worldwide, Inc. Printing apparatus and applications therefor. 6,331,056, Cl. 347-102.000.
Nokia Mobile Phones Limited: *See*—
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Nordin, Mikael, to Scania CV Aktiebolag. Apparatus and method for enabling the calibration and/or monitoring of a combustion process in a combustion engine. 6,330,877, Cl. 123-480.000.
Nordstedt, Christer; Näslund, Jan; Thyberg, Johan; Tjernberg, Lars O.; and Terenius, Lars, to Karolinska Innovations AB. Peptide binding the KLVFF-sequence of amyloid-β . 6,331,440, Cl. 436-501.000.
Noritake, Seiichiro, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Double-damper apparatus. 6,330,891, Cl. 137-595.000.
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Nortel Networks Limited: *See*—
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Notani, Ranjit N.; and Mayer, John E., to i2 Technologies US, Inc. System and process for inter-domain planning analysis and optimization using model agents as partial replicas of remote domains. 6,332,130, Cl. 705-28.000.
Notani, Ranjit N., to i2 Technologies US, Inc. System and process allowing collaboration within and between enterprises for optimal decision making. 6,332,155, Cl. 709-205.000.
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Nova, Michael P.; Senyei, Andrew E.; and David, Gary S., to Discovery Partners International. Remotely programmable matrices with memories. 6,331,273, Cl. 422-68.100.
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Ohnishi, Kazuhiko; Takanashi, Hidefumi; and Kawamoto, Yugen, to Kansai Paint Co., Ltd. Method for color matching of powder coating composition and process for the preparation thereof. 6,331,581, Cl. 523-221.000.
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Ohsumi, Takashi, to Oki Electric Industry Co., Ltd. Method of forming a dicing area of a semicondutor substrate. 6,331,449, Cl. 438-113.000.
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Ohtsuka, Kenichiro; Ueda, Tomohiko; and Kakii, Toshiaki, to Sumitomo Electric Industries, Ltd. Optical transmission member and manufacturing method therefor. 6,331,081, Cl. 385-85.000.
Ohuchi, Katsuhiro: *See*—
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Ohya, Masakiyo: *See*—
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Ohzawa, Soh: *See*—
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Okada, Hidetoshi; Miyake, Toshihiko; and Miyoshi, Sotsuo, to Mitsubishi Denki Kabushiki Kaisha. Exhaust gas recirculation system. 6,330,880, Cl. 123-568.200.
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Okada, Masakazu: *See*—
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Okamoto, Satoshi: *See*—
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Okamoto, Yoshifumi, to Shimano Inc. Conduit guide for bicycles. 6,330,989, Cl. 248-74.100.
Okazaki, Iwao; Nakamori, Yukari; Nakajima, Shozi; Kubota, Akira; and Shirakawa, Yuri, to Toray Industries, Inc. Biaxially oriented polyester film. 6,331,344, Cl. 428-141.000.
Okazaki, Takeshi: *See*—
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Oki Electric Industry Co., Ltd.: *See*—
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Okpisz, Alexander E.; and Hardage, James N., Jr., to International Business Machines Corporation. Allocation for back-to-back misses in a directory based cache. 6,332,179, Cl. 711-140.000.
Okumura, Haruhiko; Kinno, Akira; Fujiwara, Hisao; Itoh, Goh; and Kamiura, Norihiko, to Kabushiki Kaisha Toshiba. Liquid crystal display apparatus. 6,331,844, Cl. 345-87.000.
Okumura, Katsuya, to Kabushiki Kaisha Toshiba. Electrical connection device for forming and semiconductor device having metal bump electrical connection. 6,331,681, Cl. 174-267.000.
Okuno Chemical Industries Co., Ltd.: *See*—
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Okutomi, Hiroshi: *See*—
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Olafsson, Sverrir, to Conexant Systems, Inc. Method and apparatus for generating a line impairment learning signal for a data communication system. 6,332,009, Cl. 375-358.000.
Old Dominion University Research Foundation: *See*—
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O' Leary, Raymond P.; Ennis, Michael G.; Ruta, Joseph W.; and Segredo, Anthony F., to S&C Electric Company. Control arrangement and method for high-speed source-transfer switching system. 6,331,798, Cl. 327-470.000.
O' Lenick, Anthony J., Jr.: *See*—
Daly, Thomas J.; Clumpner, Michael; and O'Lenick, Anthony J., Jr., 6,331,648, Cl. 564-285.000.
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Olson, Darin Scott; and Ravi, T. S., to Novellus Systems, Inc. Deposition of low dielectric constant thin film without use of an oxidizer. 6,331,494, Cl. 438-770.000.
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Livengood, Bryan Patrick; Minor, James Craig; Moore, Michael Thomas; Olson, John Melvin; Piffarerio, Minerva; and Ting, Vincent Wen-Hwa, 6,331,372, Cl. 430-108.800.
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O' Neill, Michael A.; Kirk, Wayne D.; Simmons, Stuart C.; Trudeau, Paul; and Bremmer, Jonathan W., to Advance USA, Inc. Fiber-reinforced composite structure. 6,331,028, Cl. 296-100.000.
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Ono, Nobukazu, to Ajinomoto Co., Inc. Method for treatment in gene therapy and use of guanine derivative therefor. 6,331,528, Cl. 514-44.000.
Onoda, Akihiro; and Iwai, Yasunori, to Kabushiki Kaisha Toshiba. Methods of operation a dual-fuel injector for a gas turbine with simultaneous liquid and gaseous fuels injection during transients. 6,330,789, Cl. 60-39.030.
Onodipe, Bolanle: *See*—
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Oohashi, Hidekazu: *See*—
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Ooishi, Tsukasa, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device for reducing effects of noise on an internal circuit. 6,331,719, Cl. 257-207.000.
Ooishi, Tsukasa; Tomishima, Shigeki; and Shimano, Hiroki, to Mitsubishi Denki Kabushiki Kaisha. Synchronous semiconductor memory device having redundant circuit of high repair efficiency and allowing high speed access. 6,331,956, Cl. 365-200.000.
Ophthalmic Research Group International, Inc.: *See*—
Lipscomb, N. Thornton; and Buazza, Omar M., 6,331,058, Cl. 351-159.000.
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Or-Bach, Zvi; and Cox, Bill Douglas, to eASIC Corporation. Semiconductor device. 6,331,733, Cl. 257-758.000.
Or-Bach, Zvi, to eASIC Corporation. Semiconductor device. 6,331,789, Cl. 326-39.000.
Or-Bach, Zvi; Wurman, Ze'ev; Zeman, Richard; and Cooke, Laurance, to eASIC Corporation. Customizable and programmable cell array. 6,331,790, Cl. 326-41.000.
Orban, Joseph, III: *See*—
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Orr, Christopher Henry; Luff, Craig Janson; Dockray, Thomas; Macarthur, Duncan Whittemore; Bounds, John Alan; and Koster, James E., to British Nuclear Fuels PLC; and University of California, The Regents of the. Collection of ions. 6,331,706, Cl. 250-385.100.
Orr, Christopher Henry; Luff, Craig Janson; Dockray, Thomas; and Macarthur, Duncan Whittemore, to British Nuclear Fuels PLC; and University of California, Regents of the. Electrostatic monitoring. 6,331,707, Cl. 250-387.000.
Ortega, Kerry A.; Lewis, James R.; Vanbuskirk, Ronald E.; Wang, Huifang; and Maes, Stephane H., to International Business Machines Corporation. Transcription system for multiple speakers, using and establishing identification. 6,332,122, Cl. 704-270.000.
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Osborn, Bryan Woodrow; and Etheredge, Jay Dwain. Bonding building blocks using adhesive tapes. 6,331,337, Cl. 428-61.000.
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Oshima, Hironori: *See*—
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Oshima, Takeshi; Uchida, Hiromitsu; and Itoh, Yasushi, to Mitsubishi Denki Kabushiki Kaisha. Dual-frequency matching circuit. 6,331,815, Cl. 340-310.050.
Ø stergaard, Peter Rahbek: *See*—
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Ostermaier, John Joseph, to Du Pont de Nemours, E. I., and Company. Process for making hexamethylene diamine using ozone-treated adiponitrile that contains phosphorous compounds. 6,331,651, Cl. 564-490.000.
Ostrovsky, Leonid: *See*—
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Ovshinsky, Stanford R.; and Stempel, Robert C., to Ovonic Battery Company, Inc. Hybrid electric vehicle incorporating an integrated propulsion system. 6,330,925, Cl. 180-65.300.
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Ozaki, Teruo; Ogawa, Masahiko; Ikeda, Masami; Saito, Ichiro; Yagi, Takayuki; Ishinaga, Hiroyuki; Kashino, Toshio; Hiroki, Tomoyuki; Imanaka, Yoshiyuki; Kubota, Masahiko; and Mochizuki, Muga, to Canon Kabushiki Kaisha. Method for manufacturing ink jet recording heads. 6,331,259, Cl. 216-27.000.
Ozanne, Dominic L., II. Tactical tennis. 6,331,005, Cl. 273-244.000.
Ozawa, Ichiro; Hibino, Masaru; and Shida, Masanori, to Canon Kabushiki Kaisha. Image forming apparatus with residual toner detection and collection features. 6,332,063, Cl. 399-27.000.
Ozawa, Shoichi: *See*—
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Ozawa, Toshiaki; Moriyama, Shoichi; and Atmura, Hiroshi, to Alps Electric Co., Ltd. Magnetic head positioning method. 6,330,742, Cl. 29-603.060.
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Paikert, Bettina; Steinbach, Christian; Straessle, Richard; and Winkler, Dieter, to Alstom (Switzerland) Ltd. Premix burner. 6,331,109, Cl. 431-350.000.
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Painchaud, Yves; and Mailloux, Alain, to Art Recherches et Technologies Avancees Inc./Art Advanced Research Technologies, Inc. Scanning module for imaging through scattering media. 6,332,093, Cl. 600-476.000.
Paine, Mark A.; and Young, Jeff, to Adobe Systems Incorporated. Appearance and positioning annotation text string and base text string specifying a rule that relates the formatting annotation, base text characters. 6,332,148, Cl. 707-512.000.
Pajusola, Katri: *See*—
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Pakulski, Marek K., to BJ Service Company, U.S.A. Method for controlling gas hydrates in fluid mixtures. 6,331,508, Cl. 507-90.000.

Palatin Technologies, Inc.: *See*—
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Pan, Junhua: *See*—
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Pan, Tung-Hsing: *See*—
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Panametrics, Inc.: *See*—
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Papac, James B. Axle mount for wheelchair. 6,331,036, Cl. 301-111.000.

Papadopoulou, Barbara; Ouellette, Marc; and Olivier, Martin, to Universite Laval. Macrophage-infecting parasites expressing a granulocyte macrophage colony stimulating factor. 6,331,304, Cl. 424-269.100.

Paradigm Genetics, Inc.: *See*—
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Paraselli, Rao Bheema: *See*—
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Parekh, Kunal R.; Wu, Zhiqiang; and Li, Li, to Micron Technology, Inc. Electrically conductive structure. 6,331,720, Cl. 257-308.000.

Parén, Aarto: *See*—
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Parfeniuk, Christopher L.: *See*—
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Paris, Laurence; and Viaud, Fabrice, to Paris, Laurence. Aqueous viscous compositions, whether clear or not, for making soft or hard capsules, and method for making films for such capsules. 6,331,205, Cl. 106-205.900.

Park, Jong-Myung; Choi, Chang-Ho; Oh, Jung-Kwon; and Hong, Seung-Min, to Korea Chemical Co., Ltd. Emulsion polymer having a vesiculated structure and the process for preparing the same. 6,331,598, Cl. 526-87.000.

Park, Kyung-won: *See*—
Park, Tai-su; Park, Moon-han; Park, Kyung-won; and Lee, Han-sin, 6,331,469, Cl. 438-296.000.

Park, Moon-han: *See*—
Park, Tai-su; Park, Moon-han; Park, Kyung-won; and Lee, Han-sin, 6,331,469, Cl. 438-296.000.

Park, Tai-su; Park, Moon-han; Park, Kyung-won; and Lee, Han-sin, to Samsung Electronics Co., Ltd. Trench isolation structure, semiconductor device having the same, and trench isolation method. 6,331,469, Cl. 438-296.000.

Parker-Hannifin Corporation: *See*—
Kalinoski, John P.; and Bunyan, Michael H., 6,331,349, Cl. 428-220.000.

Parker, Matilda Y.: *See*—
Wallace, Deborah; and Parker, Matilda Y., 6,330,721, Cl. 2-174.000.

Parker, Michael A.; Shire, Douglas B.; and Tang, Chung L., to United States of America, Air Force. Demodulating and amplifying systems of lasers with optical gain control (DAS-LOGiC). 6,331,990, Cl. 372-8.000.

Parkin, Stuart Stephen Papworth: *See*—
Monsma, Douwe Johannes; Parkin, Stuart Stephen Papworth; and Scheuerlein, Roy Edwin, 6,331,944, Cl. 365-171.000.

Parmacek, Michael S.; and Solway, Julian, to Arch Development Corporation. Promoter smooth muscle cell expression. 6,331,527, Cl. 514-44.000.

Parra, Thierry: *See*—
Prieto, Didier; Rogeaux, Eric; Villemazet, Jean-Francois; and Parra, Thierry, 6,331,807, Cl. 333-128.000.

Parton, Richard L.: *See*—
Deaton, Joseph C.; Parton, Richard L.; Penner, Thomas L.; Harrison, William J.; and Fenton, David E., 6,331,385, Cl. 430-572.000.

Passlogix, Inc.: *See*—
Boroditsky, Marc D.; and Manza, Marc B., 6,332,192, Cl. 713-168.000.

Patel, Dinesh R.: *See*—
Langseth, Bjorn; Spiers, Christopher W.; Vella, Mark; and Patel, Dinesh R., 6,330,913, Cl. 166-250.010.

Patel, Mayur M.; and Walsh, Timothy A., to Owens Corning Fiberglas Technology, Inc. Blower with orifice clearing member for lifting insulation pack. 6,330,813, Cl. 65-483.000.

Patel, Mukesh K.; Kamdar, Jay; and Ranganath, V. R., to Nazomi Communications, Inc. Java virtual machine hardware for RISC and CISC processors. 6,332,215, Cl. 717-5.000.

Patel, Nainesh J.: *See*—
Vekris, Evangellos; Patel, Nainesh J.; and Hanabe, Murali, 6,331,477, Cl. 438-542.000.

Patel, Nilesh: *See*—
Beckham, Scott; Emis, Dale; and Patel, Nilesh, 6,331,246, Cl. 210-136.000.

Patent-Treuhand-Gesellschaft fuer elektrische Gluehlampen mbH: *See*—
Enders, Martin, 6,331,067, Cl. 362-503.000.

Patrusheva, Galina: *See*—
Dultz, Wolfgang; Beresnev, Leonid; Patrusheva, Galina; and Haase, Wolfgang, 6,331,910, Cl. 359-246.000.

Pätz, Werner; Ganz, Thomas; Teschner, Helmut; and Wecker, Reinhard, to Webasto Vehicle Systems International GmbH. Solar motor vehicle roof. 6,331,031, Cl. 296-211.000.

Paul, David J.: *See*—
Hu, Lawrence W.; Paul, David J.; Reis, Eugene Edward; and Green, Harry Leonard, II, 6,331,158, Cl. 600-232.000.

Paulus, Wolfgang: *See*—
Huff, Jürgen; Steuerle, Ulrich; Meixner, Hubert; Ehle, Beate; Paulus, Wolfgang; Lux, Jürgen Alfred; and Häussling, Lukas, 6,331,519, Cl. 510-475.000.

Pavela, Thomas J., to International Business Machines Corporation. System and method for developing test cases using a test object library. 6,332,211, Cl. 717-2.000.

PE Corporation (NY): *See*—
Bloch, William; Werner, William E.; Egholm, Michael; and Myers, Rene L., 6,331,618, Cl. 536-25.400.
Guegler, Karl; Beasley, Ellen M.; and Di Francesco, Valentina, 6,331,423, Cl. 435-194.000.

Pearson, Terrence S.: *See*—
Simons, Corey; Pearson, Terrence S.; Noel, Chris R.; Kidder, Joseph D.; Branscomb, Brian; Langrind, Nicholas A.; Sullivan, Daniel J.; and Fox, Barbara A., 6,332,198, Cl. 714-6.000.

Pechiney Rhenalu: *See*—
Moriceau, Jacques, 6,331,269, Cl. 266-207.000.

Peddicord, Donald B. Accessible well for brine tank. 6,331,255, Cl. 210-670.000.

Pedersen, Henrik: *See*—
Perregaard, Jens Kristian; Mikkelsen, Ivan; and Pedersen, Henrik, 6,331,544, Cl. 514-252.130.

Pehkonen, Kari, to Nokia Mobile Phones Limited. Method for converting a signal data rate, and a transmitter. 6,332,005, Cl. 375-259.000.

Peirce, Roger L.; Rhoads, Bruce C.; Duncan, John; Loftesness, Scott J.; Johnson, Kurt W.; Dobbs, Mary K.; and Mayes, Dan, to First Data Corporation. System and method for a targeted payment system discount program. 6,332,126, Cl. 705-14.000.

Peleman, Guido, to Unibind (Cyprus) Limited. File folder with connecting side pieces. 6,330,968, Cl. 229-122.240.

Pelgrom, Marcellinus J. M.: *See*—
Widdershoven, Franciscus P.; Annema, Anne J.; Storms, Maurits M. N.; and Pelgrom, Marcellinus J. M., 6,331,947, Cl. 365-185.080.

Pelletier, Sylvain: *See*—
Lefebvre, Louis-Philippe; Pelletier, Sylvain; and Thomas, Yannig, 6,331,270, Cl. 419-27.000.

Peng, Xuejun: *See*—
Dolphin, David; Peng, Xuejun; and Sternberg, Ethan D., 6,331,235, Cl. 204-451.000.

Penner, Arvi: *See*—
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Penner, Thomas L.: *See*—
Deaton, Joseph C.; Parton, Richard L.; Penner, Thomas L.; Harrison, William J.; and Fenton, David E., 6,331,385, Cl. 430-572.000.

People, Rossevelt: *See*—
Adams, Laura Ellen; Bethea, Clyde George; Eskildsen, Lars Erik; Nykolak, Gerald; People, Rossevelt; and Tanbun-Ek, Tawee, 6,331,908, Cl. 359-188.000.

Peoplenet, Inc.: *See*—
Ladner, David L.; Grazzini, Andrea J.; and Konezny, Ronald E., 6,331,825, Cl. 340-988.000.

Perez, Mario A.; Damodaran, Sundaravel; and Swan, Michael D., to 3M Innovative Properties Company. Films having a fibrillated surface and method of making. 6,331,343, Cl. 428-141.000.

Pergande, Paul Earl: *See*—
Klassen, David John; Whitney, Morgan Merritt, Jr.; Peterman, Thomas Randall; Pergande, Paul Earl; and Collins, David Robert, 6,331,680, Cl. 174-261.000.

Perlman, Stephen G.: *See*—
Mighdoll, Lee S.; Leak, Bruce A.; Perlman, Stephen G.; and Goldman, Phillip Y., 6,332,157, Cl. 709-217.000.

PerLorica, Inc.: *See*—
Wolfe, Thomas D., 6,332,110, Cl. 702-22.000.

Perre, Christian: *See*—
Schrive, Luc; Sarrade, Stéphane; and Perre, Christian, 6,331,253, Cl. 210-652.000.

Perregaard, Jens Kristian; Mikkelsen, Ivan; and Pedersen, Henrik, to H. Lundbeck A/S. Indane or dihydroindole derivatives. 6,331,544, Cl. 514-252.130.

Perry, Paul D.; and Rasokas, Ray, to Siemens Canada Limited. Evaporative emission leak detection system including vacuum regulator with sensitive seal. 6,330,878, Cl. 123-519.000.

Persinger, W. Harvey, Jr.: *See*—
Sealey, James E., II; Persinger, W. Harvey, Jr.; Luo, Mengkui; Roscelli, Vincent A.; and Neogi, Amar N., 6,331,354, Cl. 428-393.000.

Petach, Teresa A.: *See*—
Grandcolas, Michael L.; Anthony, Wendell W.; Law, Patrick; Moss, Leslie; Petach, Teresa A.; and Tompkins, Peter, 6,332,131, Cl. 705-35.000.

Peterman, Thomas Randall: *See*—
Klassen, David John; Whitney, Morgan Merritt, Jr.; Peterman, Thomas Randall; Pergande, Paul Earl; and Collins, David Robert, 6,331,680, Cl. 174-261.000.

Peters, David L.: *See*—

Bolken, Todd O.; Peters, David L.; Tandy, Patrick W.; and Cobbley, Chad A., 6,331,453, Cl. 438-127.000.
Peters, Michael S.; Holt, Clayton Walter; and Arnold, David J., Jr., to Teleflex Information Systems, Inc. Multithreaded batch processing system. 6,332,167, Cl. 709-318.000.
Peters, Robert B.: *See*—
Loprete, Joseph F.; Young, Michael R; Tolbert, John W, Jr.; Monk, David T; Wagner, Philip C; Hill, Joe T; Pippin, Larry; and Peters, Robert B., 6,331,925, Cl. 361-22.000.
Peters, Warren: *See*—
Cornelius, Charles S.; Counts, Richard H.; Myers, W. Neill; Lackey, Jeffrey D.; Peters, Warren; Shadoan, Michael D.; Sparks, David L.; and Lawrence, Timothy W., 6,330,792, Cl. 60-257.000.
Petersen, Soren: *See*—
Kouwenberg, Tineke C; Kouwenberg, Robert J; Petersen, Soren; Wall, Michael T; Morgan, David L; and Loughnane, Cathal, 6,330,808, Cl. 62-372.000.
Peterson, Bret E.: *See*—
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Peterson, Chuck: *See*—
Becker, Neil M.; Clarke, Duncan; Peterson, Chuck; Quinones, Albert A.; Haldeman, Paul; Armstrong, Kenneth K.; Wilson, Victor; Wilson, Bruce; Thompson, Gary; and Colvan, William P., 6,331,176, Cl. 604-533.000.
Peterson, LuVerne R., to Tality, L.P. Content addressable memory cell and design methodology utilizing grounding circuitry. 6,331,942, Cl. 365-49.000.
Peterson, William A., Jr.: *See*—
Nally, John F., Jr.; Peterson, William A., Jr.; Miandoab, Farid H.; and Sayar, Hamid, 6,330,981, Cl. 239-533.120.
Petit, Bernard, to Framatome; and Compagnie Generale des Matieres Nucleaires. Grid strap for a nuclear fuel assembly, and a grid including such straps. 6,332,012, Cl. 376-442.000.
Petrushenko, Yury Vladimirivich: *See*—
Makienko, Oleg Mikhailovich; Rumyantsev, Nikolai Grigoryevich, deceased; and Petrushenko, Yury Vladimirivich, 6,331,749, Cl. 313-2.100.
Pfeiffer, Richard: *See*—
Stevens, E. Henry; and Pfeiffer, Richard, 6,331,490, Cl. 438-754.000.
Pharmacia AB: *See*—
Ljunguist, Olle, 6,331,173, Cl. 604-191.000.
Phelps, Richard J.: *See*—
Beskitt, William Daniel; Harty, Michael J.; Eastman, Jeffrey; and Phelps, Richard J., 6,331,000, Cl. 271-3.010.
Pherin Pharmaceuticals, Inc.: *See*—
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Philip, Matthieu: *See*—
Makram-Ebeid, Shérif; and Philip, Matthieu, 6,332,034, Cl. 382-128.000.
Philippe, Louis C., to American Air Liquide, Inc. Combustion process and apparatus therefore containing separate injection of fuel and oxidant streams. 6,331,107, Cl. 431-285.000.
Philippo, Christophe; Mougenot, Patrick; Defosse, Gérard; Braun, Alain; and Bovy, Philippe, to Sanofi-Synthelabo. 1-aminoethylquinoline derivatives for treating urinary incontinence. 6,331,549, Cl. 514-311.000.
Philips Electronics North America Corporation: *See*—
Lambert, Nicolaas, 6,331,797, Cl. 327-333.000.
Phillips Petroleum Company: *See*—
Vidaurri, Fernando C.; Geibel, Jon F.; Waterman, James W.; Chaffin, Jay M.; South, Aubrey, Jr.; Fodor, Jeffrey S.; and Kile, Glenn F., 6,331,608, Cl. 528-388.000.
Phillips, Quintin T.; Haines, Robert E.; Baumunk, Mary B.; Heusinkveld, Jake; and Boockholdt, Darius, to Hewlett-Packard Company. Systems and methods for customizing user messages in a printing system. 6,332,062, Cl. 399-12.000.
Phinney, Robin, to Airborne Industrial Minerals Inc. Wet granulation method generating sulfur granules. 6,331,193, Cl. 23-313.00P.
Photogen, Inc.: *See*—
Dees, H. Craig; Scott, Timothy; Smolik, John T.; and Wachter, Eric A., 6,331,286, Cl. 424-1.850.
Pickard, James: *See*—
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Pierce, Keith G.: *See*—
Sachan, Vikas; Langlois, Elizabeth A. (Kegerise); Ye, Qianqiu (Christine); Pierce, Keith G.; Lack, Craig D.; Thomas, Terence M.; Burke, Peter A.; Gettman, David; and Lane, Sarah, 6,331,134, Cl. 451-41.000.
Pietranico-Cole, Sherrie Lynn: *See*—
Fotouhi, Nader; Gillespie, Paul; Guthrie, Robert William; Pietranico-Cole, Sherrie Lynn; and Yun, Weiya, 6,331,640, Cl. 549-72.000.
Pietraszewski, John A.: *See*—
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Piffarerio, Minerva: *See*—
Livengood, Bryan Patrick; Minor, James Craig; Moore, Michael Thomas; Olson, John Melvin; Piffarerio, Minerva; and Ting, Vincent Wen-Hwa, 6,331,372, Cl. 430-108.800.
Pigmentan Anticorrosive Pigments for Paints Ltd.: *See*—
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Pike, Robert T.: *See*—
Haut, Robert E.; Longenecker, Michael L.; and Pike, Robert T., 6,331,032, Cl. 297-130.000.
Pillar, John F.: *See*—
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Pioneer Hi-Bred International, Inc.: *See*—
Baszczynski, Christopher L.; Lyznik, Leszek Alexander; and Gordon-Kamm, William J., 6,331,661, Cl. 800-278.000.
Pipko, Gregory, to Pigmentan Anticorrosive Pigments for Paints Ltd. Anticorrosive pigments. 6,331,202, Cl. 106-14.370.
Pippard, Jeffrey J. Torque balanced bow quiver. 6,330,881, Cl. 124-25.700.
Pippin, Larry: *See*—
Loprete, Joseph F.; Young, Michael R; Tolbert, John W, Jr.; Monk, David T; Wagner, Philip C; Hill, Joe T; Pippin, Larry; and Peters, Robert B., 6,331,925, Cl. 361-22.000.
Pirelli Cables and Systems LLC: *See*—
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Pittrich, Klaus: *See*—
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Pittway Corporation: *See*—
Borbath, Zoltan; and Robillard, Scott E., 6,331,820, Cl. 340-606.000.
PJC Technologies, Inc.: *See*—
Doherty, Robert C.; and Stewart, Thomas K., 6,330,744, Cl. 29-825.000.
PLA, Institute of Radiation Medicine Academy of Military Medical Sciences of the: *See*—
Dong, Junxing; Tang, Zhongming; Mi, Zhibao; and Wang, Bingji, 6,331,565, Cl. 514-532.000.
Placko, James Michael: *See*—
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Placon Corporation: *See*—
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Pleasure Time Products (HK) Limited: *See*—
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Plinke, Marc: *See*—
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Plyley, Alan: *See*—
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PMD Holdings Corporation: *See*—
Weissman, Eric M.; Spilliman, William B., Jr.; and Dickens, Elmer D., Jr., 6,330,885, Cl. 128-899.000.
Podtburg, Eric R.: *See*—
Li, Qi; Podtburg, Eric R.; Walsh, Patrick John; Carter, William L.; Riley, Gilbert N., Jr.; Rupich, Martin W.; Thompson, Elliott; and Otto, Alexander, 6,331,675, Cl. 174-125.100.
Poineer Electric Corporation: *See*—
Nozu, Mitsunori; Amemiya, Kimio; and Tokunaga, Tsutomu, 6,331,842, Cl. 345-60.000.
Polaroid Corporation: *See*—
Mauchan, Donald E.; and Norris, Philip R., 6,331,715, Cl. 250-559.400.
Polic, Marko; and Weikert, Günther, to DaimlerChrysler AG. Receptacle for sound-damping accommodation of a unit which can be installed in a motor vehicle. 6,330,930, Cl. 181-204.000.
Poluzzi, Rinaldo: *See*—
Di Giura, Maddalena; Pagni, Andrea; Poluzzi, Rinaldo; and Rizzotto, Gianguido, 6,332,136, Cl. 706-1.000.
Poly Vac, Inc.: *See*—
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Pomeroy, Thomas W.: *See*—
Sachs, James; Pomeroy, Thomas W.; Novicov, Aleksey; Conboy, Garth; Walter, Erik; Leshner, William S.; Duga, Brady; and Wotiz, Richard, 6,331,865, Cl. 345-776.000.
Pooley, Nathan F.: *See*—
Van Hook, Timothy J.; Cheng, Howard H.; DeLaurier, Anthony P.; Gossett, Carroll P.; Moore, Robert J.; Shepard, Stephen J.; Anderson, Harold S.; Princen, John; Doughty, Jeffrey C.; Pooley, Nathan F.; Sheppard, Byron; Takeda, Genyo; and Kato, Shuhei, 6,331,856, Cl. 345-503.000.
Popeil, Ron: *See*—
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Popelek, Jan: *See*—
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Porocrit, L.L.C.: *See*—
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Porter, Eric L.: *See*—
House, Daniel E.; Porter, Eric L.; Smith, Robert M.; and Wheatley, Michael T., 6,332,168, Cl. 709-331.000.
Porter, John D.: *See*—
Kalpakjian, Kent M.; and Porter, John D., 6,331,766, Cl. 323-268.000.
Porter, Kelvin; and Waller, Carol, to MCI Communications Corporation. Method of and system for providing services in a communications network. 6,332,023, Cl. 379-242.000.
Potempa, Lawrence A.; and Radosevich, James A. Use of mCRP to slow cell growth and to promote maturation of cells. 6,331,403, Cl. 435-7.100.
Powell, Gary: *See*—
Seu, Preston; Boyd, Patrick; and Powell, Gary, 6,331,054, Cl. 347-87.000.
Powell, Kenneth G.; Monahan, Larry A.; and Sage, Burton H., Jr., to Becton Dickinson and Company. Process of making a molded device. 6,331,266, Cl. 264-313.000.

Powers, James Karl: *See*—
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Pozzo, Mark J.: *See*—
Ng, John S.; Wang, Ping T.; Baez, Julio A.; Liu, Chin; Anderson, Dennis K.; Lawson, Jon P.; Erb, Bernhard; Wieczorek, Joseph; Mucciariello, Gennaro; Vanzanella, Fortunato; Kunda, Sastry A.; Letendre, Leo J.; Pozzo, Mark J.; Sing, Yuen-Lung L.; and Yonan, Edward E., 6,331,622, Cl. 540-41.000.

Praast, Gerald: *See*—
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Prasad, Jonnalagadda V. R.: *See*—
Calise, Anthony J.; Prasad, Jonnalagadda V. R.; and Horn, Joseph F., 6,332,105, Cl. 701-3.000.

Pratt, George W. Device and method for determining the authenticity of documents. 6,330,939, Cl. 194-206.000.

Praxair Technology, Inc.: *See*—
Arman, Bayram; and Bonaquist, Dante Patrick, 6,330,811, Cl. 62-643.000.

Precision System Science Co., Ltd.: *See*—
Tajima, Hideji, 6,331,277, Cl. 422-100.000.

Price, Kenneth D.; and Kirkconnell, Carl S., to Raytheon Company. Apparatus and method for achieving temperature stability in a two-stage cryocooler. 6,330,800, Cl. 62-6.000.

priceline.com Incorporated: *See*—
Walker, Jay S.; Tedesco, Daniel E.; and Jorasch, James A., 6,332,129, Cl. 705-26.000.

Prieto, Didier; Rogeaux, Eric; Villemazet, Jean-Francois; and Parra, Thierry, to Alcatel. Microwave coupler for a monolithic integrated circuit. 6,331,807, Cl. 333-128.000.

Princen, John: *See*—
Van Hook, Timothy J.; Cheng, Howard H.; DeLaurier, Anthony P.; Gossett, Carroll P.; Moore, Robert J.; Shepard, Stephen J.; Anderson, Harold S.; Princen, John; Doughty, Jeffrey C.; Pooley, Nathan F.; Sheppard, Byron; Takeda, Genyo; and Kato, Shuhei, 6,331,856, Cl. 345-503.000.

Prins, Thomas J.: *See*—
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Procter & Gamble Co., The: *See*—
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Prolec GE, S. de R.L. de C.V.: *See*—
Maldonado-Cortés, Demófilo, 6,331,685, Cl. 200-17.00R.

Prorok, Richard J.: *See*—
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Protter, Andrew A.: *See*—
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Pruden, Barry: *See*—
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Prusiner, Stanley B.; Supattapone, Surachai; and Scott, Michael R. Food additives which affect conformationally altered proteins. 6,331,296, Cl. 424-78.080.

PT Intisamudera Citra Perkasa: *See*—
Shih, Chih-Hsing; and Chiu, Tien-Pao, 6,331,322, Cl. 426-315.000.

Puchner, Helmut: *See*—
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Puchovsky, Melicher: *See*—
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Purdue Research Foundation: *See*—
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Purkett, John C.: *See*—
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Purpura, Paul E.: *See*—
Cohen, Beri; DeYoung, Thomas W.; Draganovic, Krunoslav Esteban; and Purpura, Paul E., 6,331,437, Cl. 436-43.000.

Puspurs, August. Mulching structure with irrigation apertures. 6,330,762, Cl. 47-9.000.

Puthenmadathil, Jayasree: *See*—
Chaudhari, Raghunath Vitthal; Puthenmadathil, Jayasree; and Gupte, Sunil Purushotham, 6,331,502, Cl. 502-162.000.

Puttan, Krishnamurthy; Gowda, Nadur Muddanna Nanje; Rao, Eranki Venkata Surya Prakasa; and Kumar, Sushil, to Council of Scientific & Industrial Research. Composition useful as nitrification inhibiting additive for ammonia producing fertilizers. 6,331,198, Cl. 71-28.000.

Putti, George. Concrete extrusion machine and spiral conveyor therefor. 6,331,069, Cl. 366-89.000.

Qian, Richard, to Sharp Laboratories of America, Inc. System for detecting skin-tone regions within an image. 6,332,033, Cl. 382-124.000.

Qian, Shie; and Shao, Hui, to National Instruments Corporation. System and method for analyzing signals of rotating machines. 6,332,116, Cl. 702-183.000.

Qiu, Jian Ping: *See*—
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Quadrant Holdings Cambridge Limited: *See*—
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Qualcomm Incorporated: *See*—
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Quantum Corporation: *See*—
Albrecht, Laurence J.; and Saliba, George A., 6,331,920, Cl. 360-63.000.

Quinn, Robert E.; Burke, W. Michael; Henry, William S.; and Goodlive, Steven A., to Lubrizol Corporation, The. Process for the preparation of a purified acrylamido sulfonic acid monomer derivative. 6,331,647, Cl. 562-105.000.

Quinones, Albert A.: *See*—
Becker, Neil M.; Clarke, Duncan; Peterson, Chuck; Quinones, Albert A.; Haldeman, Paul; Armstrong, Kenneth K.; Wilson, Victor; Wilson, Bruce; Thompson, Gary; and Colvan, William P., 6,331,176, Cl. 604-533.000.

R. R. Donnelley & Sons: *See*—
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Raabe, Wolfgang: *See*—
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Rabie, Sameh: *See*—
Nieh, Benjamin B.; Pillar, John F.; Guttman, Jacob; Marchand, Bernard; and Rabie, Sameh, 6,331,970, Cl. 370-230.000.

Radjassamy, Rajakrishnan, to Hewlett-Packard Company. Post-silicon methods for adjusting the rise/fall times of clock edges. 6,331,800, Cl. 327-566.000.

Radosevich, James A.: *See*—
Potempa, Lawrence A.; and Radosevich, James A., 6,331,403, Cl. 435-7.100.

Radosevich, Joseph R.: *See*—
Kizilyalli, Isik C.; Merchant, Sailesh M.; and Radosevich, Joseph R., 6,331,460, Cl. 438-243.000.

Radulovacki, Miodrag; and Carley, David W., to University of Illinois, The Board of Trustees of the. Pharmacological treatment for sleep apnea. 6,331,536, Cl. 514-214.020.

Radutsky, Grigory Avramovich: *See*—
Maximovsky, Sergei Nikolaevich; and Radutsky, Grigory Avramovich, 6,330,857, Cl. 101-116.000.

Rae, Philip J.: *See*—
Rickards, Allan R.; Brannon, Harold D.; Rae, Philip J.; DiLullo, Gino A.; and Stephenson, Christopher J., 6,330,916, Cl. 166-280.000.

Raeder, Christopher H.; and Shipley, Kevin, to Advanced Micro Devices, Inc. Polishing pad having open area which varies with distance from initial pad surface. 6,331,137, Cl. 451-285.000.

Raeford, James E., Sr. Apparatus for arranging electrical cords. 6,331,121, Cl. 439-501.000.

Raghavan, B. Vijay; Ramana, K. V.; Khera, Brij; and Kumar, Naresh, to Ranbaxy Laboratories Limited. Process for the preparation of 1,8-disubstituted-1,3,4,9-tetrahydropyrano (3,4-B)-indole-1-acetic acid esters. 6,331,638, Cl. 548-432.000.

Rahman, Faress H.: *See*—
Faust, Michael B.; Rahman, Faress H.; and Adam, Philippe H., 6,331,195, Cl. 55-396.000.

Raible, Robert B.: *See*—
Graham, John; Raible, Robert B.; and Klimach, Johann S., 6,331,093, Cl. 408-1.00R.

Raith, Alex Krister, to Telefonaktiebolaget LM Ericsson (publ). Enhanced sleep mode in radiocommunication systems. 6,331,971, Cl. 370-311.000.

Raju, Bore Gowda: *See*—
Chan, Ming Fai; Wu, Chengde; Raju, Bore Gowda; Kogan, Timothy; Kois, Adam; Verner, Erik Joel; Castillo, Rosario Silvestre; Yalamoori, Venkatachalapathi; and Balaji, Vitukudi Narayanaiyengar, 6,331,637, Cl. 548-241.000.

Ramakrishnan, Kajamalai Gopalaswamy: *See*—
Mitra, Debasis; Morrison, John A.; and Ramakrishnan, Kajamalai Gopalaswamy, 6,331,986, Cl. 370-468.000.

Ramalingam, Suresh: *See*—
Cook, Duane; Murali, Venkatesan; Ramalingam, Suresh; and Vodrahalli, Nagesh, 6,331,446, Cl. 438-106.000.

Ramana, K. V.: *See*—
Raghavan, B. Vijay; Ramana, K. V.; Khera, Brij; and Kumar, Naresh, 6,331,638, Cl. 548-432.000.

Ramanujam, Rajagopalan: *See*—
Lohray, Vidya Bhushan; Lohray, Braj Bhushan; Paraselli, Rao Bheema; Ramanujam, Rajagopalan; and Chakrabarti, Ranjan, 6,331,627, Cl. 544-284.000.

Rambukkana, Anura; Fischetti, Vincent A.; and Campbell, Kevin P., to Rockefeller University, The. Receptor for *Mycobacterium leprae* and methods of use thereof. 6,331,405, Cl. 435-7.200.

Ramesh, Swaminathan; and Green, Marvin L., to BASF Corporation. Method of preparing carbamate-functional polymers. 6,331,596, Cl. 525-329.900.

Ranbaxy Laboratories Limited: *See*—
Raghavan, B. Vijay; Ramana, K. V.; Khera, Brij; and Kumar, Naresh, 6,331,638, Cl. 548-432.000.

Ranganath, V. R.: *See*—
Patel, Mukesh K.; Kamdar, Jay; and Ranganath, V. R., 6,332,215, Cl. 717-5.000.

Rao, Eranki Venkata Surya Prakasa: *See*—

Puttan, Krishnamurthy; Gowda, Nadur Muddanna Nanje; Rao, Eranki Venkata Surya Prakasa; and Kumar, Sushil, 6,331,198, Cl. 71-28.000.
Rao, Srinivasa: *See*—
McDonough, William; Rao, Srinivasa; and Srivastava, Ashutosh, 6,330,858, Cl. 101-208.000.
Rasmussen, Henrik, to Egebjerg Maskinfabrik A/S. Feeding device for feeding animals. 6,330,867, Cl. 119-52.100.
Rasokas, Ray: *See*—
Perry, Paul D.; and Rasokas, Ray, 6,330,878, Cl. 123-519.000.
Ratcliff, Bruce H.: *See*—
Baskey, Michael E.; Brice, Frank W.; Glassen, Steven G.; Hefferon, Eugene P.; Ratcliff, Bruce H.; Stagg, Arthur J.; and Valley, Stephen R., 6,332,171, Cl. 710-39.000.
Ratcliff, Glenn: *See*—
Erie, Dorothy A.; Ratcliff, Glenn; and Superfine, Richard, 6,330,824, Cl. 73-105.000.
Rauschenberger GmbH u. Co.: *See*—
Rauschenberger, Jörg, 6,330,733, Cl. 16-326.000.
Rauschenberger, Jörg, to Rauschenberger GmbH u. Co. Articulation, especially for connecting sidepieces of ladders. 6,330,733, Cl. 16-326.000.
Ravi, T. S.: *See*—
Olson, Darin Scott; and Ravi, T. S., 6,331,494, Cl. 438-770.000.
Ravikanth, Rayadurgam; Strandberg, Ove; and Vaananen, Pasi, to Nokia Telecommunications, Oy. Generic label encapsulation protocol for carrying label switched packets over serial links. 6,331,978, Cl. 370-392.000.
Ravindran, Saj: *See*—
Wylie, Douglas H.; Szabo, John; and Ravindran, Saj, 6,331,223, Cl. 156-160.000.
Raymond, June K. Coin collecting card and information relating thereto. 6,330,942, Cl. 206-0.840.
Raymond, Samuel O., to Benthos, Inc. Process and apparatus for testing containers. 6,330,823, Cl. 73-52.000.
Raynor Canada Inc.: *See*—
Friesen, Raymond J.; and Ostrovsky, Leonid, 6,330,901, Cl. 160-201.000.
Raytheon Company: *See*—
Price, Kenneth D.; and Kirkconnell, Carl S., 6,330,800, Cl. 62-6.000.
Readdy, Robert: *See*—
Millon, Joel; Berger, Kenneth; Readdy, Robert; and Samaroo, Derek, 6,331,331, Cl. 427-536.000.
Reay, C. Phillip: *See*—
Coco, Geoffrey P.; and Reay, C. Phillip, 6,331,864, Cl. 345-763.000.
Record, Rae Denese: *See*—
Badylak, Stephen F.; Record, Rae Denese; and McPherson, Timothy B., 6,331,319, Cl. 424-551.000.
Red Swan, Inc.: *See*—
Lewis, Michael E., 6,331,243, Cl. 205-727.000.
Reddy, Baireddy R.: *See*—
Chatterji, Jiten; Cromwell, Roger S.; Reddy, Baireddy R.; and King, Bobby J., 6,330,917, Cl. 166-295.000.
Reddy' s Laboratories Ltd.: *See*—
Lohray, Vidya Bhushan; Lohray, Braj Bhushan; Paraselli, Rao Bheema; Ramanujam, Rajagopalan; and Chakrabarti, Ranjan, 6,331,627, Cl. 544-284.000.
Redmond, Russell James: *See*—
Epstein, Gordon Howard; Plyley, Alan; and Redmond, Russell James, 6,331,172, Cl. 604-82.000.
Reece, Norman Lee. Frame for rescue device. 6,330,932, Cl. 182-48.000.
Reedy, M. Parameswara; Farooqui, Firdous; and Michael, Maged A., to Beckman Coulter, Inc. Cyanine dye phosphoramidites. 6,331,632, Cl. 548-148.000.
Reidy, Keith E.: *See*—
Whelan, Francis J.; and Reidy, Keith E., 6,330,801, Cl. 62-55.500.
Reimer, Joe, to Placon Corporation. Clamshell package with curved card. 6,330,945, Cl. 206-470.000.
Reinhard, Michael; and Spallek, Michael, to Schott Glaswerke. Prefilled, low particle, sterile disposable syringe for injecting preparations and procedure for manufacture. 6,331,174, Cl. 604-232.000.
Reinold, Udo: *See*—
Roscher, Dietrich; Gebert, Norbert; and Reinold, Udo, 6,331,037, Cl. 346-141.000.
Reis, Eugene Edward: *See*—
Hu, Lawrence W.; Paul, David J.; Reis, Eugene Edward; and Green, Harry Leonard, II, 6,331,158, Cl. 600-232.000.
Reliance Electric Technologies, LLC: *See*—
El-Ibiary, Yehia, 6,331,823, Cl. 340-870.160.
Reliance Industries, Inc.: *See*—
Desai, Devendra Dahyabhai, 6,331,070, Cl. 366-197.000.
Renau, Thomas Eric: *See*—
Domagala, John Michael; Ellsworth, Edmund Lee; Huang, Liren; Renau, Thomas Eric; Singh, Rajeshwar; and Stier, Michael Andrew, 6,331,538, Cl. 514-224.500.
Renauld, Jean-Christophe: *See*—
Dumoutier, Laure; Louhed, Jamila; and Renauld, Jean-Christophe, 6,331,613, Cl. 536-23.500.
Rene, Svein, to Uniteam ASA. Device for connecting containers. 6,331,090, Cl. 403-286.000.
Renfer, Dale S.: *See*—
Schank, Richard L.; Limburg, William W.; and Renfer, Dale S., 6,331,370, Cl. 430-58.300.
Renkes, Kenneth R.; and Damerow, Robert W., to General Electric Company. Electric motor connector module. 6,331,742, Cl. 310-68.00C.
Renovo Limited: *See*—
Ferguson, Mark William James; and Shah, Mamta, 6,331,298, Cl. 424-85.100.
Rentz, Lawrence E.: *See*—
Baily, Frederick G.; Rentz, Lawrence E.; Retzlaff, Klaus M.; and Turnquist, Norman A., 6,331,006, Cl. 277-355.000.
Renvall, Ilkka: *See*—
Jäkärä , Jukka; Aksela, Reijo; Parén, Aarto; and Renvall, Ilkka, 6,331,192, Cl. 8-109.000.
Research Development Corp: *See*—
Yamada, Toshishige; Takiguchi, Yoshihiro; Huang, Dehuan; and Yamamoto, Yoshihisa, 6,331,454, Cl. 438-128.000.
Research Foundation of State University of New York, The: *See*—
Kaufman, Arie E.; Liang, Zhengrong; Wax, Mark R.; Wan, Ming; and Chen, Dongquing, 6,331,116, Cl. 434-262.000.
Research Foundation of State University of New York at Stony Brook, The: *See*—
Bingham, Paul M.; and Zachar, Zuzana, 6,331,559, Cl. 514-440.000.
Research Institute of Advanced Material Gas-Generator, Ltd.: *See*—
Nakayasu, Tetsuo, 6,331,496, Cl. 501-95.200.
Reshef, Eilon: *See*—
Gever, Eval; Hermoni, Nir; Bergman, Orit; Tayar, Gil; Reshef, Eilon; Gill, Doron; Feuerstein, Addy; Caneti, Yaron; Oppenheim, Roy; Etam, Eran; Shpeizer, Zohar; Borer, Yoav; Livine, Eyal; Kikin, Ruth; Zuckerman, Oren; and Kaas, Ron, 6,331,861, Cl. 345-629.000.
Retzlaff, Klaus M.: *See*—
Baily, Frederick G.; Rentz, Lawrence E.; Retzlaff, Klaus M.; and Turnquist, Norman A., 6,331,006, Cl. 277-355.000.
Rexam Beverage Can Company: *See*—
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Rey, Christian: *See*—
Lee, Dosuk D.; Rey, Christian; Aiolova, Maria; and Tofighi, Aliassghar, 6,331,312, Cl. 424-426.000.
Rheault, Alan E.: *See*—
MacDonald, Douglas B.; King, Jonathan J.; Sanders, Steven E.; Rheault, Alan E.; Dykstra, James R.; Waalkes, Michael L.; Walz, David A.; Williams, Patricia A.; Gravel, Donald P.; and Chang, Joseph, 6,330,773, Cl. 52-239.000.
Rhine, Scott A., to Hewlett-Packard Company. System and method for managing data retrieval bandwidth. 6,332,140, Cl. 707-9.000.
Rhoads, Bruce C.: *See*—
Peirce, Roger L.; Rhoads, Bruce C.; Duncan, John; Loftesness, Scott J.; Johnson, Kurt W.; Dobbs, Mary K.; and Mayes, Dan, 6,332,126, Cl. 705-14.000.
Rhoads, Geoffrey; and Gustafson, Ammon, to Digimarc Corporation. Multiple watermarking techniques for documents and other data. 6,332,031, Cl. 382-100.000.
Rhode, Douglas Scott: *See*—
Brown, Todd Allen; and Rhode, Douglas Scott, 6,332,104, Cl. 701-1.000.
Rhodes, James Scott: *See*—
Mabry, Frank Robert; and Rhodes, James Scott, 6,330,971, Cl. 235-383.000.
Ribarich, Thomas J.; and Houk, Talbott M., to International Rectifier Corporation. Circuit for detecting near or below resonance operation of a fluorescent lamp driven by half-bridge circuit. 6,331,755, Cl. 315-225.000.
Rice, Michael J.: *See*—
Crooks, Stephen L.; Lindstrom, Kyle J.; Merrill, Bryon A.; and Rice, Michael J., 6,331,539, Cl. 514-228.500.
Richard Wolf GmbH: *See*—
Haefele, Ulrich; and Voegele, Michael, 6,331,156, Cl. 600-179.000.
Richardson, Brian C.: *See*—
Hotkowski, Peter D.; Todaro, Frank A.; Williams, Daniel J.; Burton, Peter C.; and Richardson, Brian C., 6,331,222, Cl. 156-157.000.
Richardson, Peter, to Applied Research Systems ARS Holding NV. Pharmaceutical compositions of peptides having low solubility in physiological medium. 6,331,520, Cl. 514-2.000.
Richardson, William C.; and Kimber, Kevin D., to Texaco, Inc. Tracers for heavy oil. 6,331,436, Cl. 436-27.000.
Richiuso, Dominick: *See*—
Whitworth, Adam; and Richiuso, Dominick, 6,331,786, Cl. 326-30.000.
Whitworth, Adam; and Richiuso, Dominick, 6,331,787, Cl. 326-30.000.
Rickards, Allan R.; Brannon, Harold D.; Rae, Philip J.; DiLullo, Gino A.; and Stephenson, Christopher J., to BJ Services Company. Formation treatment method using deformable particles. 6,330,916, Cl. 166-280.000.
Ricoh Company, Ltd.: *See*—
Kimura, Mitsuteru, 6,331,074, Cl. 374-10.000.
Morita, Tetsuya, 6,331,896, Cl. 358-1.180.
Murai, Taeko; Matsumoto, Shuzo; Fujii, Mitsumi; Nakano, Tomoaki; Makita, Hideyuki; Ohta, Yoshihisa; Kakuda, Shinichi; and Hirota, Tetsuro, 6,331,052, Cl. 347-68.000.
Yanagawa, Nobuyuki, 6,332,066, Cl. 399-302.000.
Yoshikawa, Ryosuke; Jibiki, Yuichi; and Yasuda, Mitsuru, 6,330,738, Cl. 29-426.400.
Rideout, Janet L.: *See*—
Yerxa, Benjamin R.; Rideout, Janet L.; and Jones, Arthur C., 6,331,529, Cl. 514-47.000.
Riegelman, Harry: *See*—
Manzella, Francis; and Riegelman, Harry, 6,330,769, Cl. 52-204.620.
Riesselmann, Gottfried. Arrangement of a plurality of food-preparation apparatuses. 6,330,851, Cl. 99-339.000.
Riggs, Arthur D.: *See*—

Cabilly, Shmuel; Heyneker, Herbert L.; Holmes, William E.; Riggs, Arthur D.; and Wetzel, Ronald B., 6,331,415, Cl. 435-69.600.

Riggs, Michael Terry: *See*—
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Riley, Gilbert N., Jr.: *See*—
Li, Qi; Podtburg, Eric R.; Walsh, Patrick John; Carter, William L.; Riley, Gilbert N., Jr.; Rupich, Martin W.; Thompson, Elliott; and Otto, Alexander, 6,331,675, Cl. 174-125.100.

Risley, Chris; Lamb, Richard; and Guzovsky, Eduard. Domain name system lookup allowing intelligent correction of searches and presentation of auxiliary information. 6,332,158, Cl. 709-219.000.

Riso Kagaku Corporation: *See*—
Sekiguchi, Hideyuki, 6,331,001, Cl. 271-9.010.

Ritchie, Terry John: *See*—
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Rite-Hite Holding Corporation: *See*—
Kern, Rodney; Leppert, Dave; Schulte, Peter; Schwingle, James; and Shanahan, Dean, 6,330,763, Cl. 49-231.000.

Rizzotto, Gianguido: *See*—
Di Giura, Maddalena; Pagni, Andrea; Poluzzi, Rinaldo; and Rizzotto, Gianguido, 6,332,136, Cl. 706-1.000.

Robbins, John A. Process and apparatus for reduction of microorganisms in a conductive medium using low voltage pulsed electrical energy. 6,331,321, Cl. 426-231.000.

Robert Bosch GmbH: *See*—
Bochmann, Harald; and Tanneberger, Volkmar, 6,332,070, Cl. 455-12.100.
Hog, Norbert, 6,331,819, Cl. 340-604.000.

Roberts, Matthew R.: *See*—
Morris, Alan C.; Mabrito, Craig A.; and Roberts, Matthew R., 6,331,113, Cl. 433-215.000.

Roberts, Michael: *See*—
Spaderna, Dieter; Roberts, Michael; and Sabha, Raed, 6,331,977, Cl. 370-360.000.

Robertsson, Mats, to Telefonaktiebolaget LM Ericsson (publ). Method of fabricating mirrors in polymer waveguides. 6,331,382, Cl. 430-321.000.

Robillard, Scott E.: *See*—
Borbath, Zoltan; and Robillard, Scott E., 6,331,820, Cl. 340-606.000.

Robinson, Karl M.: *See*—
Walker, Michael A.; and Robinson, Karl M., 6,331,139, Cl. 451-490.000.

Robison, Keith E., to Millennium Pharmaceuticals, Inc. Protease homologs. 6,331,427, Cl. 435-226.000.

Roche Diagnostics GmbH: *See*—
Nussbaum, Sabine; Moessner, Ellen; Lenz, Helmut; and Praast, Gerald, 6,331,402, Cl. 435-7.100.

Rockefeller University, The: *See*—
Rambukkana, Anura; Fischetti, Vincent A.; and Campbell, Kevin P., 6,331,405, Cl. 435-7.200.

Rockwell Automation Technologies, Inc.: *See*—
Baran, Michael S., 6,331,935, Cl. 361-686.000.

Rockwell Collins, Inc.: *See*—
Young, C. David; Krueger, Roy W.; Becker, Michael S.; Harwell, Henry O.; and Stevens, James A., 6,331,973, Cl. 370-337.000.

Rockwell Technologies LLC: *See*—
Song, Bang-Sup; and Bugeja, Alex R., 6,331,830, Cl. 341-121.000.

Rodel Holdings Inc.: *See*—
Sachan, Vikas; Langlois, Elizabeth A. (Kegerise); Ye, Qianqiu (Christine); Pierce, Keith G.; Lack, Craig D.; Thomas, Terence M.; Burke, Peter A.; Gettman, David; and Lane, Sarah, 6,331,134, Cl. 451-41.000.

Rodov, Vladimir; Hsueh, Wayne Y. W.; Chang, Paul; and Chern, Michael, to Advanced Power Devices, Inc. Power rectifier device and method of fabricating power rectifier devices. 6,331,455, Cl. 438-138.000.

Rodrigues, Donald J. Window storm panel brace. 6,330,768, Cl. 52-202.000.

Rodrigues, Julio F., to Thomas & Betts International, Inc. Connector for hard-line coaxial cable. 6,331,123, Cl. 439-584.000.

Rodriguez, Luis. Eyeglass holder. 6,330,962, Cl. 224-246.000.

Rodriguez, Pablo: *See*—
Fusaro, James M.; Darveaux, Robert F.; and Rodriguez, Pablo, 6,331,451, Cl. 438-126.000.

Roedy Black Publishing Inc.: *See*—
Chase, Wayne O., 6,332,143, Cl. 707-100.000.

Rogatschnig, Johann, to U.S. Philips Corporation. Apparatus having a switch which is operable via a dome-shaped elastic cover. 6,331,686, Cl. 200-302.200.

Rogeaux, Eric: *See*—
Prieto, Didier; Rogeaux, Eric; Villemazet, Jean-Francois; and Parra, Thierry, 6,331,807, Cl. 333-128.000.

Rogers, Philip J.; and Wu, Xiaoqing, to Azi International SRL. Method and apparatus for accelerating animation in a video graphics system. 6,331,854, Cl. 345-473.000.

Rogers, Rosetta: *See*—
Bennington, Gerard E.; Backer, George; Green, Shawn; Cooper, Bill; Spell, Dave; Rogers, Rosetta; and Davis, Bruce, 6,331,877, Cl. 348-731.000.

Rogoszewicz, Richard: *See*—
Lin, Jenn-Shing; Rogoszewicz, Richard; and Wang, Jin-Der, 6,331,996, Cl. 375-130.000.

Rohm and Haas Company: *See*—
Molnar, Linda Katherine, 6,331,580, Cl. 523-201.000.
Taylor, Thomas J.; Bristol, Derek C.; and Nedwick, Paul, 6,331,350, Cl. 428-221.000.
Waatti, Kurt J.; and Kuhajek, Eugene J., 6,331,261, Cl. 252-184.000.

Rohm Co., Ltd.: *See*—
Yamade, Takumi; Hayashi, Hiroaki; and Sako, Teruhisa, 6,331,868, Cl. 347-208.000.

Rohringer, Peter; Geoffroy, André; Burkhard, Andreas; Marti, Erwin; Schreiber, Werner; and Zelger, Josef, to Ciba Specialty Chemicals Corporation. Triazinylaminostilbene compounds. 6,331,626, Cl. 544-193.200.

Roman Eissfeller GmbH: *See*—
Eissfeller, Roman, 6,330,966, Cl. 228-8.000.

Romero, Arthur G.; and Darlington, William H., to Upjohn Company, The. Therapeutically useful 2-aminotetralin derivatives. 6,331,636, Cl. 548-235.000.

Rongved, Pål: *See*—
Klaveness, Jo; Rongved, Pål; Høgset, Anders; Tolleshaug, Helge; Cuthbertson, Alan; Hoff, Lars; Bryn, Klaus; Hellebust, Halldis; and Solbakken, Magne, 6,331,289, Cl. 424-9.520.

Roos, Dave: *See*—
Zhao, Wei; Arnold, Steven; Noerpel, Anthony; and Roos, Dave, 6,332,069, Cl. 455-12.100.

Röper, Michael: *See*—
Blankertz, Heinrich-Josef; Grenacher, Armin Volker; Sauer, Friedrich; Schwahn, Harald; Schönmann, Willi; and Röper, Michael, 6,331,656, Cl. 568-451.000.

Rosati, Robert J.: *See*—
DeFrank, Michael P.; and Rosati, Robert J., 6,332,090, Cl. 600-474.000.

Roscelli, Vincent A.: *See*—
Sealey, James E., II; Persinger, W. Harvey, Jr.; Luo, Mengkui; Roscelli, Vincent A.; and Neogi, Amar N., 6,331,354, Cl. 428-393.000.

Roscher, Dietrich; Gebert, Norbert; and Reinold, Udo, to ABB Instrumentation Limited. Drive arrangement for a writing head. 6,331,037, Cl. 346-141.000.

Rose, Peter: *See*—
Smick, Theodore H.; Farley, Marvin; Ryding, Geoffrey; Satoh, Shu; and Rose, Peter, 6,331,713, Cl. 250-497.100.

Rosenblum, Ben Z.: *See*—
Sampayan, Stephen E.; Krogh, Michael L.; Davis, Steven C.; Decker, Derek E.; Rosenblum, Ben Z.; Sanders, David M.; and Elizondo-Decanini, Juan M., 6,331,194, Cl. 29-25.030.

Roser, Bruce J.; Kampinga, Jaap; Colaco, Camilo; and Blair, Julian, to Quadrant Holdings Cambridge Limited. Solid dose delivery vehicle and methods of making same. 6,331,310, Cl. 424-423.000.

Rosinger, Christopher: *See*—
Kehne, Heinz; Willms, Lothar; Bauer, Klaus; Bieringer, Hermann; and Rosinger, Christopher, 6,331,506, Cl. 504-214.000.

Ross, Michael J.; Segars, James E.; Cummings, William G.; Barrios, Carlos M.; and Gampa, Ravishanke V., to Fedex Corporation. Methods for shipping freight. 6,332,098, Cl. 700-226.000.

Rosse, Meinrad, to Nestec S.A. Device for preparing beverages from water-reconstitutable foodstuffs. 6,330,850, Cl. 99-289.00R.

Roth, Douglas E.: *See*—
Molano, Rafael; Gianfagna, Lawrence; Roth, Douglas E.; Kurtek, Ed; Goulet, Alan; Symonds, Robert D.; Gill, Robert Bradley; Biwer, William; Walsh, Mike; Welsh, Julie; Gebhard, Richard; and Spice-Kopischke, Joel, 6,330,978, Cl. 235-492.000.

Roth, Joseph D.; and Finster, Wayne D., to NCR Corporation. Label sheet. 6,331,018, Cl. 283-81.000.

Roth, Stephen, to Neose Technologies, Inc. Saccharide compositions, methods and apparatus for their synthesis. 6,331,418, Cl. 435-97.000.

Rothermel, Albrecht: *See*—
Hirtz, Gangolf; Hollmann, Thomas; Rothermel, Albrecht; and Schweer, Rainer, 6,331,875, Cl. 348-497.000.

Rothman, James E.; Hartl, F. Ulrich; Hoe, Mee H.; Houghton, Alan; Takeuchi, Yoshizumi; and Mayhew, Mark, to Sloan-Kettering Institute for Cancer Research. Method for treatment of cancer and infectious disease and compositions useful in same. 6,331,299, Cl. 424-93.210.

Rowse, Dan D.; and Rowse, Ron A. Wheel rake spring assembly. 6,330,785, Cl. 56-377.000.

Rowse, Ron A.: *See*—
Rowse, Dan D.; and Rowse, Ron A., 6,330,785, Cl. 56-377.000.

Roy, Christopher H. W., to Outdoor Technologies, L.L.C. Plastic sheath products for studded steel T-posts, and production. 6,330,998, Cl. 256-19.000.

Roy, Pradip Kumar: *See*—
Bhowmik, Siddhartha; Merchant, Sailesh Mansinh; Oh, Minseok; Roy, Pradip Kumar; and Sen, Sidhartha, 6,331,484, Cl. 438-648.000.

Roy, Ronnen Andrew: *See*—
Cabral, Cyril, Jr.; Carruthers, Roy Arthur; Harper, James McKell Edwin; Lavoie, Christian; Roy, Ronnen Andrew; and Wang, Yun Yu, 6,331,486, Cl. 438-682.000.

Roy, Surajit; Pruden, Barry; Adris, Alaa; and Grace, John, to University Technologies International Inc. Low-temperature autothermal steam reformation of methane in a fluidized bed. 6,331,283, Cl. 423-652.000.

Royal Free Hospital School of Medicine: *See*—
Emery, Vincent C; and Griffiths, Paul, 6,331,417, Cl. 435-91.320.

Rubin, Raphael: *See*—
Baserga, Renato; Sell, Christian; and Rubin, Raphael, 6,331,526, Cl. 514-44.000.

Rubinstenn, Gilles: *See*—
Tuloup, Remy; Dalko, Maria; and Rubinstenn, Gilles, 6,331,535, Cl. 514-182.000.

Rubin-Wilson, Beth; Guo, Lining; Skokut, Tom; Young, Scott; Folkerts, Otto; Armstrong, Katherine; and Cowen, Neil M., to Dow AgroSciences LLC. Acyl-ACP thioesterase nucleic acids from maize and methods of altering palmitic acid levels in transgenic plants therewith. 6,331,664, Cl. 800-298.000.

Ruchatz, Folker: *See*—
Meffert, Helmut; Sanner, Axel; Berndl, Gunther; Ruchatz, Folker; Kolter, Karl; and Bauer, Kurt Heinz, 6,331,294, Cl. 424-78.030.

Ruckman, Judy; Gold, Larry; Stephens, Andrew; and Janjic, Nebojsa, to Gilead Sciences, Inc. Nucleic acid ligands to integrins. 6,331,394, Cl. 435-6.000.

Rudi, Rossau: *See*—
Lieven, Stuyver; Joost, Louwagie; and Rudi, Rossau, 6,331,389, Cl. 435-5.000.

Ruebner, Anja: *See*—
Breslow, Ronald; Ruebner, Anja; and Yang, Zhiwei, 6,331,530, Cl. 514-58.000.

Ruey Yuan Co., Ltd.: *See*—
Cheng, Koon-Ming, 6,330,736, Cl. 24-656.000.

Ruggles, Brian: *See*—
Ciuca, Zazu; Woods, Patrick; Palmer, Roger; Ruggles, Brian; and Kuhar, Otto, 6,330,899, Cl. 160-170.00R.

Ruhe, Thomas W.: *See*—
Blackman, Jeffrey R.; Ruhe, Thomas W.; Jackson, Larry A.; McCue, Thomas E., Jr.; and O'Hara, Kevin, 6,332,068, Cl. 399-364.000.

Rumney, Gary S., to Sun Microsystems, Inc. Power sub-frame for a system unit. 6,331,933, Cl. 361-679.000.

Rumyantsev, Nikolai Grigoryevich, deceased: *See*—
Makienko, Oleg Mikhailovich; Rumyantsev, Nikolai Grigoryevich, deceased; and Petrushenko, Yury Vladimirivich, 6,331,749, Cl. 313-2.100.

Rupert, Matt: *See*—
Holce, Kent; Morey, Frank; Rupert, Matt; and Bowman, Mark, 6,331,821, Cl. 340-635.000.

Rupich, Martin W.: *See*—
Li, Qi; Podtburg, Eric R.; Walsh, Patrick John; Carter, William L.; Riley, Gilbert N., Jr.; Rupich, Martin W.; Thompson, Elliott; and Otto, Alexander, 6,331,675, Cl. 174-125.100.

Rushing, Allen J. Auto-ranging digital densitometer with lookup table. 6,331,832, Cl. 341-139.000.

Ruskin, Frank; Simson, Anton K.; Brusso, Peter C.; Charmasson, Henri J. A.; and Buchaca, John D. Compact table-top vending machine. 6,330,958, Cl. 221-75.000.

Russell, Barry Lowell, to International Business Machines Corporation. Recovering and relocating unreliable disk sectors when encountering disk drive read errors. 6,332,204, Cl. 714-710.000.

Russell, Brian A., to Britek Footwear Development, LLC. Footwear with energy storing sole construction. 6,330,757, Cl. 36-28.000.

Ruta, Joseph W.: *See*—
O'Leary, Raymond P.; Ennis, Michael G.; Ruta, Joseph W.; and Segredo, Anthony F., 6,331,798, Cl. 327-470.000.

Rutherford, Robert B.; and Dudman, Richard L., to Northcoast Technologies. Aircraft de-icing system. 6,330,986, Cl. 244-134.00E.

Rydbeck, Nils; Molnar, Barbara; Guey, Jiann-Ching; Khayrallah, Ali; and Koilpillai, R. David, to Ericsson Inc. Apparatus and methods for providing high-penetration messaging in wireless communications systems. 6,332,006, Cl. 375-262.000.

Ryding, Geoffrey: *See*—
Smick, Theodore H.; Farley, Marvin; Ryding, Geoffrey; Satoh, Shu; and Rose, Peter, 6,331,713, Cl. 250-497.100.

S&C Electric Company: *See*—
O'Leary, Raymond P.; Ennis, Michael G.; Ruta, Joseph W.; and Segredo, Anthony F., 6,331,798, Cl. 327-470.000.

Sabatier, Laurence: *See*—
Bulet, Philippe; Hetru, Charles; Hoffmann, Jules; and Sabatier, Laurence, 6,331,522, Cl. 514-10.000.

Sabde, Gundu M.; and Meikle, Scott, to Micron Technology, Inc. Method and apparatus for mechanical and chemical-mechanical planarization of microelectronic substrates with metal compound abrasives. 6,331,135, Cl. 451-41.000.

Sabha, Raed: *See*—
Spaderna, Dieter; Roberts, Michael; and Sabha, Raed, 6,331,977, Cl. 370-360.000.

Sachan, Vikas; Langlois, Elizabeth A. (Kegerise); Ye, Qianqiu (Christine); Pierce, Keith G.; Lack, Craig D.; Thomas, Terence M.; Burke, Peter A.; Gettman, David; and Lane, Sarah, to Rodel Holdings Inc. Composition and method for polishing in metal CMP. 6,331,134, Cl. 451-41.000.

Sachdeva, Yesh P.: *See*—
Brugnara, Carlo; Halperin, Jose; Bellot, Emile M., Jr.; Froimowitz, Mark; Lombardy, Richard John; Clifford, John J.; Gao, Ying-Duo; Haidar, Reem M.; Kelleher, Eugene W.; Kher, Falguni M.; Moussa, Adel M.; Sachdeva, Yesh P.; Sun, Minghua; and Taft, Heather N., 6,331,564, Cl. 514-520.000.

Sachs, James; Pomeroy, Thomas W.; Novicov, Aleksey; Conboy, Garth; Walter, Erik; Leshner, William S.; Duga, Brady; and Wotiz, Richard, to Softbook Press, Inc. Method and apparatus for electronically distributing and viewing digital contents. 6,331,865, Cl. 345-776.000.

Sadahiro, Kenichi: *See*—
Toge, Tetsuo; Komatsubara, Michiro; Honda, Atsuhito; Sadahiro, Kenichi; and Senda, Kunihiro, 6,331,215, Cl. 148-111.000.

Sadakata, Takayuki: *See*—
Kezuka, Satoshi; and Sadakata, Takayuki, 6,331,256, Cl. 210-712.000.

Sadashima, Takanori: *See*—
Kadoi, Yasunori; Ota, Tsuyoshi; Isozaki, Toshio; Katayama, Kiyokazu; and Sadashima, Takanori, 6,331,620, Cl. 536-213.000.

Sage, Burton H., Jr.: *See*—
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Saha, Avijit: *See*—
Bossen, Douglas Craig; Chiarot, Kevin Arthur; Jaisimha, Namratha Rajasekharaiah; and Saha, Avijit, 6,332,181, Cl. 711-155.000.

Sahai, Anil; Brede, Stephen K.; Topliffe, Douglas A.; and Topliffe, Roger Ogden, to Interactive Medical Developments, L.C. Apparatus and method for medication dispensing and messaging. 6,332,100, Cl. 700-242.000.

Sahli, Richard: *See*—
Baumgartner, Albert; Sahli, Richard; Gasser, Daniel; Muller, Paul; and Untersander, Walter, 6,330,841, Cl. 81-57.370.

Saint-Gobain Bayform America, Inc.: *See*—
Wylie, Douglas H.; Szabo, John; and Ravindran, Saj, 6,331,223, Cl. 156-160.000.

Saito, Hideto: *See*—
Jinno, Yasuo; Saito, Hideto; Tsukagoshi, Hideo; Iketani, Jun'ichi; Fujita, Tadao; Sawaide, Minoru; Inada, Yasuo; and Shimizu, Yoshihiko, 6,330,776, Cl. 52-649.100.

Saito, Ichiro: *See*—
Ozaki, Teruo; Ogawa, Masahiko; Ikeda, Masami; Saito, Ichiro; Yagi, Takayuki; Ishinaga, Hiroyuki; Kashino, Toshio; Hiroki, Tomoyuki; Imanaka, Yoshiyuki; Kubota, Masahiko; and Mochizuki, Muga, 6,331,259, Cl. 216-27.000.

Saito, Junichi: *See*—
Yamada, Yukimitsu; Kawahata, Ken; Hebiguchi, Hiroyuki; Fujiyoshi, Tatsumi; and Saito, Junichi, 6,331,862, Cl. 345-660.000.

Saito, Keishi: *See*—
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Saito, Noriaki: *See*—
Shimizu, Yoshito; Saito, Noriaki; and Yabuki, Hiroyuki, 6,331,804, Cl. 330-285.000.

Saito, Ryuichi: *See*—
Kitajima, Masaaki; Tsumura, Makoto; Mikami, Yoshiro; Funahata, Katsuyuki; Nagae, Yoshiharu; Wakui, Yoko; Saito, Ryuichi; Matsui, Makoto; and Nemoto, Fumiaki, 6,331,845, Cl. 345-88.000.

Saitoh, Hitoshi: *See*—
Koga, Masaki; Suzuki, Nobutaka; Saitoh, Hitoshi; Oyamada, Kenshiro; Tokuhara, Koki; Mino, Shuji; Ishigaki, Naoyuki; and Yamamoto, Hitoshi, 6,331,214, Cl. 148-101.000.

Sakaguchi, Kiyofumi: *See*—
Nishida, Shoji; Yonehara, Takao; Sakaguchi, Kiyofumi; and Iwane, Masaaki, 6,331,208, Cl. 117-89.000.

Sakai, Keita, to Canon Kabushiki Kaisha. Patterning method, and method for manufacturing semiconductor device. 6,331,383, Cl. 430-325.000.

Sakai, Osamu; and Takagi, Keiji, to Alps Electric Co., Ltd. Substrate having repaired metallic pattern and method and device for repairing metallic pattern on substrate. 6,331,348, Cl. 428-209.000.

Sakai, Yasuhiro: *See*—
Kuramoto, Shigefumi; Sakai, Yasuhiro; Ikeda, Hayato; and Ando, Nobuyuki, 6,331,373, Cl. 430-110.000.

Sakamoto, Kazutoshi: *See*—
Hori, Yasuhiro; Tsurumi, Yasuhisa; Takase, Shigehiro; Hatanaka, Hiroshi; Sakamoto, Kazutoshi; Hashimoto, Seiji; Ohki, Hidenori; Tojo, Takashi; Matsuda, Keiji; and Kawabata, Kohji, 6,331,521, Cl. 514-9.000.

Sakamoto, Moritaka: *See*—
Fukunaga, Kunihiko; Oshima, Hironori; and Sakamoto, Moritaka, 6,330,770, Cl. 52-220.200.

Sakamoto, Takayuki, to Sony Corporation. Color extraction apparatus and method. 6,332,036, Cl. 382-162.000.

Sakamoto, Takeshi: *See*—
Takei, Hiroyuki; and Sakamoto, Takeshi, 6,331,276, Cl. 422-82.090.

Sakamoto, Toshihiro: *See*—
Nakajima, Hiroomi; and Sakamoto, Toshihiro, 6,331,727, Cl. 257-587.000.

Sako, Teruhisa: *See*—
Yamade, Takumi; Hayashi, Hiroaki; and Sako, Teruhisa, 6,331,868, Cl. 347-208.000.

Sakowicz, Roman: *See*—
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Salganicoff, Marcos: *See*—
Glass, Randal; Salganicoff, Marcos; and von Seelen, Ulf Cahn, 6,332,193, Cl. 713-170.000.

Saliba, George A.: *See*—
Albrecht, Laurence J.; and Saliba, George A., 6,331,920, Cl. 360-63.000.

Salles, Jean-Pierre, to Lipogel. Powder compositions of unilamellar liposomes. 6,331,315, Cl. 424-450.000.

Salomonsson, Per: *See*—
Lundgren, Staffan; Jobson, Edward; Unosson, Anders; and Salomonsson, Per, 6,331,232, Cl. 204-265.000.

Samadani, Ramin, to Electronics for Imaging, Inc. Method and apparatus for automatically generating single-channel critical color transformations. 6,331,899, Cl. 358-1.900.

Samaroo, Derek: *See*—
Millon, Joel; Berger, Kenneth; Readdy, Robert; and Samaroo, Derek, 6,331,331, Cl. 427-536.000.

Sampayan, Stephen E.; Krogh, Michael L.; Davis, Steven C.; Decker, Derek E.; Rosenblum, Ben Z.; Sanders, David M.; and Elizondo-Decanini, Juan M., to United States of America, Energy. Process for manufacturing hollow fused-silica insulator cylinder. 6,331,194, Cl. 29-25.030.

Samson, Allan L.: *See*—
Zolock, Michael J.; and Samson, Allan L., 6,331,674, Cl. 174-60.000.

Samsung Display Devices Co., Ltd.: *See*—
Makienko, Oleg Mikhailovich; Rumyantsev, Nikolai Grigoryevich, deceased; and Petrushenko, Yury Vladimirivich, 6,331,749, Cl. 313-2.100.

Samsung Electronic Co., Ltd.: *See*—
Cho, Won-bong; Lee, Sang-youl; and Hwang, Ho-woong, 6,332,156, Cl. 709-206.000.

Samsung Electronics Co., Ltd.: *See*—
Bae, Ki-Soon, 6,331,377, Cl. 430-313.000.
Cho, Chang-Ho, 6,330,993, Cl. 248-371.000.
Cho, Ho Yeol, 6,331,963, Cl. 365-230.030.
Kim, Chang-oon; and Lee, Kyune-hee, 6,331,847, Cl. 345-100.000.
Kim, Jai-young, 6,331,338, Cl. 428-64.300.
Lee, Jueng-gil; Lee, Jung-ho; and Nam, Hyo-rak, 6,331,443, Cl. 438-30.000.
Lee, Keum-joo; Hwang, In-seak; Ko, Yong-sun; and Song, Chang-Iyoung, 6,331,478, Cl. 438-592.000.
Park, Tai-su; Park, Moon-han; Park, Kyung-won; and Lee, Han-sin, 6,331,469, Cl. 438-296.000.
Shin, Deok-Joon; and Kim, Young-Tae, 6,331,955, Cl. 365-189.050.
Shin, Kyu-Ho, 6,330,803, Cl. 62-156.000.

SamSung SDI Co., Ltd.: *See*—
Kwak, Jong-Seop; and Kang, Kyeung-Yae, 6,331,751, Cl. 313-402.000.

San Francisco Bay Area Rapid Transit District: *See*—
Gordon, Susanna P.; and Evans, John A., 6,332,107, Cl. 701-20.000.

Sanborn, Norman G., to Gillette Company, The. Aqueous correction fluids. 6,331,579, Cl. 523-161.000.

Sanders, David M.: *See*—
Sampayan, Stephen E.; Krogh, Michael L.; Davis, Steven C.; Decker, Derek E.; Rosenblum, Ben Z.; Sanders, David M.; and Elizondo-Decanini, Juan M., 6,331,194, Cl. 29-25.030.

Sanders, Robert: *See*—
Bridgelall, Raj; Shepard, Howard; Barkan, Edward; Sanders, Robert; Maiman, Mitch; Dvorkis, Paul; Boriotti, Joseph; Krichever, Mark; Gurevich, Vladimir; and Breytman, Alexander, 6,330,973, Cl. 235-462.450.

Sanders, Steven E.: *See*—
MacDonald, Douglas B.; King, Jonathan J.; Sanders, Steven E.; Rheault, Alan E.; Dykstra, James R.; Waalkes, Michael L.; Walz, David A.; Williams, Patricia A.; Gravel, Donald P.; and Chang, Joseph, 6,330,773, Cl. 52-239.000.

Sandhu, Gurtej: *See*—
Ireland, Philip J.; Glass, Thomas R.; and Sandhu, Gurtej, 6,331,379, Cl. 430-314.000.

Sandoval, David Lynn; and Jacobson, Loren A. Tension/compression fatigue cracking grips. 6,330,830, Cl. 73-856.000.

Sanfilippo, Delfo; and Leonardi, Salvatore, to STMicroelectronics S.r.l. Process for manufacturing a semiconductor material wafer having power regions dielectrically insulated from circuitry regions. 6,331,470, Cl. 438-311.000.

Sang, Chune, to Procter & Gamble Co., The. Water-in-oil cosmetic compositions comprising willow bark extract. 6,331,305, Cl. 424-401.000.

Sanner, Axel: *See*—
Meffert, Helmut; Sanner, Axel; Berndl, Gunther; Ruchatz, Folker; Kolter, Karl; and Bauer, Kurt Heinz, 6,331,294, Cl. 424-78.030.

Sanofi-Synthelabo: *See*—
Philippo, Christophe; Mougenot, Patrick; Defosse, Gérard; Braun, Alain; and Bovy, Philippe, 6,331,549, Cl. 514-311.000.

Santel, Hans-Joachim: *See*—
Linker, Karl-Heinz; Findeisen, Kurt; Andree, Roland; Drewes, Mark-Wilhelm; Lender, Andreas; Schallner, Otto; Haas, Wilhelm; Santel, Hans-Joachim; and Dollinger, Markus, 6,331,507, Cl. 504-244.000.

Santella, Joseph B., III: *See*—
Ko, Soo S.; DeLucca, George V.; Duncia, John V.; Santella, Joseph B., III; and Gardner, Daniel S., 6,331,541, Cl. 514-237.200.
Ko, Soo S.; DeLucca, George V.; Duncia, John V.; Santella, Joseph B., III; and Wacker, Dean A., 6,331,545, Cl. 514-253.010.

Sapiro, Edward Paul: *See*—
Boardman, William Hunter, IV; Bosley, Dewey Reed; and Sapiro, Edward Paul, 6,330,809, Cl. 62-434.000.

Sarrade, Stéphane: *See*—
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Sartorius AG: *See*—
Spannagel, Wilfried; Diedrich, Karin; Dudda, Olaf; and Baseler, Christian, 6,331,683, Cl. 177-245.000.

Sasaki, Takahiro, to NEC Corporation. Semiconductor device production method. 6,331,489, Cl. 438-745.000.

Sasaki, Teruo, to NEC Corporation. Automatic frequency control in FSK receiver using voltage window deviation. 6,332,007, Cl. 375-344.000.

Sasaki, Tsuneki, to NEC Corporation. Huffman decoder using two priority encoder to reduce circuit scale. 6,331,827, Cl. 341-65.000.

Sasaki, Yoshitaka: *See*—
Iijima, Atsushi; and Sasaki, Yoshitaka, 6,330,743, Cl. 29-603.140.

Sasaoka, Eisuke: *See*—
Hatayama, Hitoshi; and Sasaoka, Eisuke, 6,332,055, Cl. 385-140.000.

Sasaoka, Makoto: *See*—
Makita, Hidehisa; Mimura, Toshihiko; Mori, Masahiro; Inoue, Yuji; Shiomi, Satoru; Komori, Ayako; Nagao, Yoshitaka; Sasaoka, Makoto; and Itoyama, Shigenori, 6,331,671, Cl. 136-244.000.

Sasson, Gideon, to Charles Schwab & Co., Inc. Customer web log-in architecture. 6,332,161, Cl. 709-227.000.

Satake, Masayuki: *See*—
Shimodaira, Kiichi; and Satake, Masayuki, 6,331,882, Cl. 349-122.000.

Sato, Hiroaki; Ashida, Kenichi; Ishizaki, Kimihide; and Ida, Koji, to Oki Data Corporation. Image forming apparatus including a charging power supply and a neutralizing device. 6,332,064, Cl. 399-50.000.

Sato, Kohei: *See*—
Kaneko, Kikuzo; Masuda, Takayuki; Matsuda, Fumihiko; Sato, Kohei; and Tanikawa, Kouji, 6,331,250, Cl. 210-635.000.

Sato, Morio; and Ohuchi, Katsuhiro, to Honda Giken Kogyo Kabushiki Kaisha. Communication control apparatus. 6,331,822, Cl. 340-825.070.

Sato, Osamu: *See*—
Inoue, Masaomi; Sato, Osamu; and Adachi, Michio, 6,330,870, Cl. 123-90.170.

Sato, Tatsuru: *See*—
Muramatsu, Hiroyuki; Kuwahara, Seiji; Akase, Atsuya; Kawaguchi, Kouji; and Sato, Tatsuru, 6,331,047, Cl. 347-55.000.

Sato, Yoshinori; Suzuki, Katuo; Ito, Osamu; and Tokairin, Yoshiichi, to Casio Computer Co., Ltd.; and Yamagata Casio Co., Ltd. Portable devices and transmitting/receiving systems including the portable devices. 6,331,965, Cl. 368-10.000.

Satoh, Makoto; Fujiwara, Yasuki; and Imai, Akio, to Sumitomo Chemical Company, Limited. Catalyst for α-olefin polymerization and process for producing α-olefin polymer. 6,331,501, Cl. 502-128.000.

Satoh, Shu: *See*—
Smick, Theodore H.; Farley, Marvin; Ryding, Geoffrey; Satoh, Shu; and Rose, Peter, 6,331,713, Cl. 250-497.100.

Satoi, Tsunenobu, to Canon Kabushiki Kaisha. Color filter manufacturing apparatus. 6,331,384, Cl. 430-347.000.

Satoyoshi, Tsutomu; Amano, Kenji; Ito, Hiromichi; and Miyazaki, Yoshito, to Tokyo Electron Limited. Inductively-coupled-plasma-processing apparatus. 6,331,754, Cl. 315-111.510.

Sauer, Friedrich: *See*—
Blankertz, Heinrich-Josef; Grenacher, Armin Volker; Sauer, Friedrich; Schwahn, Harald; Schönmann, Willi; and Röper, Michael, 6,331,656, Cl. 568-451.000.

Saunders, Richard W.: *See*—
Zhu, Tianmin; Shah, Syed M.; and Saunders, Richard W., 6,331,547, Cl. 514-291.000.

Savas, Stephen E., to Mattson Technology Inc. System and method for rapid thermal processing. 6,331,697, Cl. 219-390.000.

Savill, Derek Guy: *See*—
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Savoye, Eugene D.: *See*—
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Savvateev, Vadim N.: *See*—
Aylott, Jonathan W.; Chen-Esterlit, Zoe; Friedl, Jon H.; Kopelman, Raoul; Savvateev, Vadim N.; and Shinar, Joseph, 6,331,438, Cl. 436-172.000.

Sawada, Kenichi; and Ishikawa, Atsushi, to Minolta Co., Ltd. Image processing device. 6,332,045, Cl. 382-272.000.

Sawai, Yasumasa; Ohta, Takashi; Mushiake, Nobuo; Nagata, Hideki; and Ohzawa, Soh, to Minolta Co., Ltd. Liquid crystal projector with an illumination optical system. 6,331,879, Cl. 349-9.000.

Sawaide, Minoru: *See*—
Jinno, Yasuo; Saito, Hideto; Tsukagoshi, Hideo; Iketani, Jun'ichi; Fujita, Tadao; Sawaide, Minoru; Inada, Yasuo; and Shimizu, Yoshihiko, 6,330,776, Cl. 52-649.100.

Sayar, Hamid: *See*—
Nally, John F., Jr.; Peterson, William A., Jr.; Miandoab, Farid H.; and Sayar, Hamid, 6,330,981, Cl. 239-533.120.

SCA Hygiene Products Zeist B.V.: *See*—
Besemer, Arie Cornelis; and Thornton, Jeffrey Wilson, 6,331,619, Cl. 536-105.000.

Scania CV Aktiebolag (publ): *See*—
Jakobsson, Bertil, 6,330,778, Cl. 52-729.100.
Nordin, Mikael, 6,330,877, Cl. 123-480.000.

Schadegg, John J.: *See*—
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Schallner, Otto: *See*—
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Schank, Richard L.; Limburg, William W.; and Renfer, Dale S., to Xerox Corporation. Squeak and deletion resistant imaging member and system. 6,331,370, Cl. 430-58.300.

Schauser, Klaus E., to Expertcity.com, Inc. Method and apparatus for providing remote access, control of remote systems and updating of display information. 6,331,855, Cl. 345-502.000.

Schenk, Bernhard, to DaimlerChrysler AG. Device for driving a folding top for a convertible vehicle. 6,331,029, Cl. 296-122.000.

Schense, Jason: *See*—
Hubbell, Jeffrey A.; and Schense, Jason, 6,331,422, Cl. 435-193.000.

Scheuer, Mark Edmund: *See*—

Cranford, Hayden Clavie, Jr.; Efferson, Joseph Ronald, Jr.; Gary, Theodore Allen; Johnson, Steven Howard; Kreielsheimer, Gregg; and Scheuer, Mark Edmund, 6,332,166, Cl. 709-250.000.

Scheuerlein, Roy Edwin: *See—*
Monsma, Douwe Johannes; Parkin, Stuart Stephen Papworth; and Scheuerlein, Roy Edwin, 6,331,944, Cl. 365-171.000.

Scheule, Ronald K.; Bagley, Rebecca G.; Eastman, Simon J.; Cheng, Seng H.; Marshall, John; Harris, David J.; Lee, Edward R.; Siegel, Craig S.; Chang, Chau-Dung; Hubbard, S. Catherine; Johnson, Duane E.; Maneval, Daniel C.; Shepard, H. Michael; and Gregory, Richard J., to Genzyme Corporation. Organ-specific targeting of cationic amphiphile / DNA complexes for gene therapy. 6,331,524, Cl. 514-44.000.

Schierholz, Wilfried; Lauschke, Götz; Ott, Stefan; Schmidt, Ulrich; and Hein, Peter, to Axiva GmbH. Continuous, chaotic convection mixer, heat exchanger and reactor. 6,331,072, Cl. 366-338.000.

Schindelhauer, Dirk; and Cooke, Howard. Method for producing long DNA constructs in agarose. 6,331,397, Cl. 435-6.000.

Schindler, Wayne Godoy: *See—*
Eccles, Steven Robert; and Schindler, Wayne Godoy, 6,331,099, Cl. 416-142.000.

Schledjewski, Ralf: *See—*
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Schlumberger Technology Corporation: *See—*
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Schmeltz, Timothy J.: *See—*
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Schmick, Christie Liscomb. Flexible core recreational device. 6,331,128, Cl. 441-129.000.

Schmidl, Timothy M.: *See—*
Hosur, Srinath; Schmidl, Timothy M.; and Dabak, Anand G., 6,331,975, Cl. 370-342.000.

Schmidt, Joachim: *See—*
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Schmidt, Ulrich: *See—*
Schierholz, Wilfried; Lauschke, Götz; Ott, Stefan; Schmidt, Ulrich; and Hein, Peter, 6,331,072, Cl. 366-338.000.

Schmidt, Wolfgang: *See—*
Wehner, Volkmar; Stilz, Hans Ulrich; Schmidt, Wolfgang; and Seiffge, Dirk, 6,331,552, Cl. 514-341.000.

Schmitt, Philip Charles; and Luu, Ky Thoai, to Harris Corporation. RF amplifier system having an improved power supply. 6,331,801, Cl. 330-10.000.

Schmitz, Adele: *See—*
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Schmutz, Marc: *See—*
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Schreiber, Werner: *See—*
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Schrepf, Volker; and Malvar, Michael, to Henlopen Manufacturing Co., Inc. Container-applicator system for material for the skin. 6,331,085, Cl. 401-128.000.

Schrive, Luc; Sarrade, Stéphane; and Perre, Christian, to Commissariat a l'Energie Atomique. Method and plant for tangential filtration of a viscous liquid. 6,331,253, Cl. 210-652.000.

Schriver, Charles B.: *See—*
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Schrodi, Karl: *See—*
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Schroeder, Steve A.; and Wang, Run, to NutraSweet Co., The. Amorphous N-[N-(3,3-dimethylbutyl)-L-α-aspartyl]-L-phenylalanine 1-methyl ester. 6,331,646, Cl. 560-40.000.

Schuhmacher, Thomas: *See—*
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Schulz, Anthony A., to EnviroDerm Pharmaceuticals, Inc. Composition for prevention skin irritation caused by fecal enzymes. 6,331,295, Cl. 424-78.070.

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Schwingle, James: *See—*
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Science Applications International Corporation: *See—*
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Scientific Learning Corp.: *See—*
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Scios Inc.: *See—*
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Scotia Holdings PLC.: *See—*
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Scott, David R. Apparatus and methods for in-space satellite operations. 6,330,987, Cl. 244-158.00R.

Scott, Kenneth Alan: *See—*
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Scott, Michael R.: *See—*
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Scott, Stephen Daniel; and Morris, Daniel Gordon, to Delphi Technologies, Inc. Flexible vehicle antenna. 6,331,838, Cl. 343-715.000.

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Seagate Technology: *See—*
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Sealey, Bradley S.: *See—*
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Sealey, James E., II; Persinger, W. Harvey, Jr.; Luo, Mengkui; Roscelli, Vincent A.; and Neogi, Amar N., to Weyerhaeuser Company. Alkaline pulp having low average degree of polymerization values and method of producing the same. 6,331,354, Cl. 428-393.000.

Seaman, Larry D. Dock leveler apparatus. 6,330,751, Cl. 33-465.000.

Seay, James R.: *See—*
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Sebillotte-Arnaud, Laurence; and Gagnebien, Didier, to L'Oreal. O/W emulsion with a high electrolyte content and its use in dermocosmetics, in particular for treating irritation and/or sensitive skin phenomena. 6,331,307, Cl. 424-401.000.

Seccombe, S. Dana; and Steinmetz, Charles R., to Hewlett-Packard Company. Method and apparatus for pressurizing ink in an inkjet printer ink supply using spring force. 6,331,053, Cl. 347-85.000.

Secure Computing Corporation: *See—*
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Seidel, David A.: *See—*
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Seko, Hideo; Okamoto, Hikaru; and Ishii, Masami, to Aisin Seiki Kabushiki Kaisha. Method for manufacturing carbon sheet. 6,331,224, Cl. 156-181.000.
Seko, Shinzo: *See—*
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Settle, Sheri Stotz, to Great Plains Buffalo Products, Inc. Buffalo hair yarn and fabric and method of making buffalo hair yarn and fabric. 6,330,786, Cl. 57-200.000.
Seu, Preston; Boyd, Patrick; and Powell, Gary, to Hewlett-Packard Company. Unitary one-piece body structure for ink-jet cartridge. 6,331,054, Cl. 347-87.000.
Severin, Erik: *See—*
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SFS Industrie Holding AG: *See—*
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SGS-Thomson Microelectronics S.r.l.: *See—*
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Shaanan, Gad; Duval, Francois; and Brousseau, Ivan, to Qualcomm Incorporated. Multiple mode wireless telephone. 6,332,084, Cl. 455-556.000.
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Shah, Ali R.; and H'mimy, Hossam, to Ericsson Inc. Method and system for identifying and analyzing downlink interference sources in a telecommunications network. 6,332,076, Cl. 455-423.000.
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Shani, Ziv; and Shoseyov, Oded, to CBD Technologies Ltd.; and Hebrew University of Jerusalem, Yissum Research and Development Company of the. Process of expressing and isolating recombinant proteins and recombinant protein products from plants, plant derived tissues or cultured plant cells. 6,331,416, Cl. 435-69.700.
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Sharan, Sujit, to Micron Technology, Inc. Process for making low dielectric constant dielectric films. 6,331,493, Cl. 438-765.000.
Sharan, Sujit: *See—*
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Sharma, Rohit; and McAdams, Larry R., to ONI Systems Corp. Method and apparatus for operation, protection and restoration of heterogeneous optical communication networks. 6,331,906, Cl. 359-119.000.
Sharma, Shubh D., to Palatin Technologies, Inc. Structurally determined cyclic metallo-constructs and applications. 6,331,285, Cl. 424-1.690.
Sharp Electronics Corporation: *See—*
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Sharp Kabushiki Kaisha: *See—*
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Shattil, Steve J., to GenghisComm LLC. Spatial interferometry multiplexing in wireless communications. 6,331,837, Cl. 342-378.000.
Shatz, Narkis E. I.; and Bortz, John C., to Science Applications International Corporation. Irradiance redistribution guide. 6,331,061, Cl. 359-857.000.
Shaw, Gregory R.; and Killion, Mead C., to Etymotic Research, Inc. Hearing test apparatus and method having adaptive artifact rejection. 6,331,164, Cl. 600-559.000.
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Sheard, Stuart Nicholas; and Ritchie, Terry John. Geological data acquisition system. 6,332,109, Cl. 702-11.000.

Sheikh, Tahir Q.; Johnson, Karl S.; and Nguyen, Ken, to Micron Technology, Inc. Method of remote access and control of environmental conditions. 6,332,202. Cl. 714-39.000.
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Shi, Zhongming; and Hsu, Ken, to Nokia Mobile Phones Limited. Apparatus and associated method, for operating on receive signals received at a receiver. 6,332,083, Cl. 455-552.000.
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Shibata, Masato: *See*—
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Shibata, Noboru; Tanaka, Tomoharu; Nakai, Hiroto; Yamamura, Toshio; and Fujimura, Susumu, to Kabushiki Kaisha Toshiba. Non-volatile semiconductor memory capable of storing one-bit data or multi-bit data. 6,331,945. Cl. 365-185.030.
Shibuya, Akinobu; and Matsui, Koji, to NEC Corporation. Thin-film resistor, wiring substrate, and method for manufacturing the same. 6,331,811, Cl. 338-308.000.
Shibuya, Kazuaki; Nakajima, Tomonari; and Suzuki, Seiji, to Tokyo Kikai Seisakusho, Ltd. Pin action timing adjustment device in folding cylinder and folding device. 6,331,154, Cl. 493-424.000.
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Shimada, Takeshi; Kageyama, Keisuke; and Ando, Soyoko, to Sumitomo Special Metals Co., Ltd. Microwave dielectric ceramic composition. 6,331,499, Cl. 501-139.000.
Shimamoto, Tetsuo; Inoue, Hidekazu; and Hayashi, Yasuhiro, to Suntory Limited. 1-cycloalkyl-1,8-naphthyridin-4-one derivative as type IV phosphodiesterase inhibitor. 6,331,548, Cl. 514-300.000.
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Shimazaki, Toshifumi: *See*—
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Shimazu, Satoshi; Sugitani, Hiroshi; Masuda, Kazuaki; Ikeda, Masami; Ishinaga, Hiroyuki; Kashino, Toshio; Kubota, Masahiko; Yoshihira, Aya; and Kudo, Kiyomitsu, to Canon Kabushiki Kaisha. Liquid discharging method, a liquid discharge head, and a liquid discharger apparatus. 6,331,043, Cl. 347-48.000.
Shimizu, Ikuo: *See*—
Matsushita, Shoshiro; Shimizu, Ikuo; Toyoda, Hiroshi; and Tanaka, Asako, 6,331,653, Cl. 568-347.000.
Shimizu, Masaaki, to Canon Kabushiki Kaisha. Pattern output apparatus and method for converting form data and input data to intermediate data to form an overlay pattern. 6,331,894, Cl. 358-1.130.
Shimizu, Takeo: *See*—
Irie, Yuichiro; Shimizu, Takeo; and Ozawa, Shoichi, 6,332,053, Cl. 385-123.000.
Shimizu, Yoshihiko: *See*—
Jinno, Yasuo; Saito, Hideto; Tsukagoshi, Hideo; Iketani, Jun'ichi; Fujita, Tadao; Sawaide, Minoru; Inada, Yasuo; and Shimizu, Yoshihiko, 6,330,776, Cl. 52-649.100.
Shimizu, Yoshito; Saito, Noriaki; and Yabuki, Hiroyuki, to Matsushita Electric Industria, Co., Ltd. Amplifier and radio communication apparatus using the same. 6,331,804, Cl. 330-285.000.
Shimodaira, Kiichi; and Satake, Masayuki, to Nitto Denko Corporation. Optical member, cell substrate and liquid-crystal display. 6,331,882, Cl. 349-122.000.
Shimogama, Shigeru: *See*—
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Shimokura, Naoyoshi: *See*—
Munakata, Takeo; Kikuchi, Naoshi; Shinohara, Takashi; Banse, Hideo; Kaneko, Takao; Akasaka, Hiroji; Aida, Yukikatsu; Shimokura, Naoyoshi; Ishikubo, Yuji; Okada, Tetsuya; and Suzuki, Tamezo, 6,331,677, Cl. 174-128.100.
Shimono, Muchiji, to YKK Corporation. Woven slide fastener belt with differently constructed attaching and body regions. 6,330,892, Cl. 139-384.000.
Shin, Deok-Joon; and Kim, Young-Tae, to Samsung Electronics Co., Ltd. Semiconductor memory device. 6,331,955, Cl. 365-189.050.
Shin-Etsu Chemical Co., Ltd.: *See*—
Azechi, Syuuichi; Taira, Yujiro; and Yoshida, Takeo, 6,331,588, Cl. 524-493.000.
Shin, Kyu-Ho, to Samsung Electronics Co., Ltd. Operation control apparatus for a refrigerator. 6,330,803, Cl. 62-156.000.
Shinar, Joseph: *See*—
Aylott, Jonathan W.; Chen-Esterlit, Zoe; Friedl, Jon H.; Kopelman, Raoul; Savvateev, Vadim N.; and Shinar, Joseph, 6,331,438, Cl. 436-172.000.
Shinbo, Yoshiharu: *See*—
Katayama, Ichiro; Watanabe, Yoshinobu; Nakajima, Yuichi; and Shinbo, Yoshiharu, 6,331,133, Cl. 451-9.000.
Shingyoji, Masahito; and Takeuchi, Nobuyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Microwave circuit package and edge conductor structure. 6,331,806, Cl. 333-33.000.
Shinko Electric Industries Co., Ltd.: *See*—
Higashi, Mitsutoshi, 6,331,679, Cl. 174-260.000.
Shinohara, Takashi: *See*—
Munakata, Takeo; Kikuchi, Naoshi; Shinohara, Takashi; Banse, Hideo; Kaneko, Takao; Akasaka, Hiroji; Aida, Yukikatsu; Shimokura, Naoyoshi; Ishikubo, Yuji; Okada, Tetsuya; and Suzuki, Tamezo, 6,331,677, Cl. 174-128.100.
Shiohama, Eiji: *See*—
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Shiomi, Satoru: *See*—
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Shiotsuka, Hidenori: *See*—
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Shipley, Kevin: *See*—
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Shirai, Masami, to Asahi Kogaku Kogyo Kabushiki Kaisha. Light interception structure for an automatic focus detection surveying instrument. 6,331,918, Cl. 359-698.000.
Shirai, Shoji: *See*—
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Shiraishi, Kazunari; Wakisako, Hitoshi; Maruyama, Yoshinaga; Yano, Kyoji; and Nakashima, Moriyuki, to Kabushiki Kaisha Yaskawa Denki; and Kyushu Electric Power Co., Ltd. Outdoor range finder. 6,331,887, Cl. 356-3.030.

Shirakawa, Yuri: *See*—
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Shirota, Hideki; and Okada, Jun, to Okuno Chemical Industries Co., Ltd. Method of electroplating non-conductive plastic molded products. 6,331,239, Cl. 205-167.000.

Shirota, Yuichi: *See*—
Takahashi, Koji; Shirota, Yuichi; Ban, Koichi; Sugi, Hikaru; Niimi, Yasuhiko; Kishita, Hiroshi; Yamanaka, Yasushi; and Naka, Masayoshi, 6,330,909, Cl. 165-202.000.

Shively, J. Thomas: *See*—
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Shohami, Esther; Gallily, Ruth; and Mechoulam, Raphael, to Hebrew University of Jerusalem, Yissum Research Development Co. of the. Tumor necrosis factor alpha (TNF-α) inhibiting pharmaceuticals. 6,331,560, Cl. 514-454.000.

Shokoohi, Mehrdad M.; Henson, Michael R.; and von Hoffmann, Gerard, to Endologix, Inc. Endoluminal vascular prosthesis. 6,331,190, Cl. 623-1.220.

Shor, Asher: *See*—
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Shore, T. Michael; and Puchovsky, Melicher, to Morgan Construction Company. Retarded cooling system with granular insulation material. 6,331,219, Cl. 148-589.000.

Shoseyov, Oded: *See*—
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Showa Aircraft Industry Co., Ltd.: *See*—
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Showa Denko K.K.: *See*—
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Shuffle Master, Inc.: *See*—
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Shukunami, Hiroshi; and Fujioka, Toshio, to Miyawaki Inc. Method and apparatus for inspecting steam traps, and management system for managing steam traps. 6,332,112, Cl. 702-56.000.

Siann, Jonathan I.: *See*—
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Sidell, Mark Franklin: *See*—
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Siegel, Craig S.: *See*—
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Siegel, Mark S.: *See*—
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Siemens Aktiengesellschaft: *See*—
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Harth, Arno; Tippmann-Krayer, Petra; Holzner, Peter; Korte, Werner; Schrodi, Karl; and Klug, Andreas, 6,331,981, Cl. 370-395.100.
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Siemens Automotive Corporation: *See*—
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Siemens Canada Limited: *See*—
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Siemens Westinghouse Power Corporation: *See*—
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Signafy, Inc.: *See*—
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Signal Pharmaceuticals, Inc.: *See*—
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Silicon Access Networks, Inc.: *See*—
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Silicon Graphics, Incorporated: *See*—
Hussain, Zahid S.; and Millet, Timothy J., 6,331,857, Cl. 345-522.000.
Van Hook, Timothy J.; Cheng, Howard H.; DeLaurier, Anthony P.; Gossett, Carroll P.; Moore, Robert J.; Shepard, Stephen J.; Anderson, Harold S.; Princen, John; Doughty, Jeffrey C.; Pooley, Nathan F.; Sheppard, Byron; Takeda, Genyo; and Kato, Shuhei, 6,331,856, Cl. 345-503.000.

Silverbrook, Kia, to Silverbrook Research Pty Ltd. Method of manufacture of a buckle plate ink jet printer. 6,331,258, Cl. 216-27.000.

Silverbrook, Kia; and Walmsley, Simon Robert, to Silverbrook Research Pty Ltd. Method for protecting on-chip memory (flash and RAM) against attacks. 6,331,946, Cl. 365-185.040.

Silverbrook Research Pty Ltd: *See*—
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Silverbrook, Kia; and Walmsley, Simon Robert, 6,331,946, Cl. 365-185.040.

Silverman, Robert H.; Williams, Bryan R. G.; and Der, Sandy, to Cleveland Clinic Foundation, The. Arrays for identifying agents which mimic or inhibit the activity of interferons. 6,331,396, Cl. 435-6.000.

Silverstein, Irwin B.: *See*—
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Simmons, Stuart C.: *See*—
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Simons, Corey; Pearson, Terrence S.; Noel, Chris R.; Kidder, Joseph D.; Branscomb, Brian; Langrind, Nicholas A.; Sullivan, Daniel J.; and Fox, Barbara A., to Equipe Communications Corporation. Network device for supporting multiple redundancy schemes. 6,332,198, Cl. 714-6.000.

Sims, Marc, to Porocrit, L.L.C. Method and membrane system for sterilizing and preserving liquids using carbon dioxide. 6,331,272, Cl. 422-28.000.

Simson, Anton K.: *See*—
Ruskin, Frank; Simson, Anton K.; Brusso, Peter C.; Charmasson, Henri J. A.; and Buchaca, John D., 6,330,958, Cl. 221-75.000.

Sinclair, Iain. LED flashlight. 6,331,062, Cl. 362-200.000.

Sing, Yuen-Lung L.: *See*—
Ng, John S.; Wang, Ping T.; Baez, Julio A.; Liu, Chin; Anderson, Dennis K.; Lawson, Jon P.; Erb, Bernhard; Wieczorek, Joseph; Mucciariello, Gennaro; Vanzanella, Fortunato; Kunda, Sastry A.; Letendre, Leo J.; Pozzo, Mark J.; Sing, Yuen-Lung L.; and Yonan, Edward E., 6,331,622, Cl. 540-41.000.

Singh, Arjun: *See*—
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Singh, Rajeshwar: *See*—
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Singh, Suresh B.: *See*—
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Siros Technologies, Inc.: *See*—
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Sivik, Matthew R.; and Bryant, Charles P., to Lubrizol Corporation, The. Nitrogen containing acrylic copolymers. 6,331,603, Cl. 526-307.000.

Sjø holm, Carsten: *See*—
Bjørnvad, Mads Eskelund; Clausen, Ib Groth; Schülein, Martin; Bech, Lisbeth; Østergaard, Peter Rahbek; and Sjøholm, Carsten, 6,331,426, Cl. 435-201.000.

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SKS metaplast Scheffer-Klute GmbH: *See*—
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Sleger, Roger R.; and Grobe, Russell R., to Hewlett-Packard Company. Corrosion resistant thermal ink jet print cartridge and method of manufacturing same. 6,331,044, Cl. 347-50.000.

Sloan-Kettering Institute for Cancer Research: *See*—
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SMC Corporation: *See*—
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Smick, Theodore H.; Farley, Marvin; Ryding, Geoffrey; Satoh, Shu; and Rose, Peter, to Applied Materials, Inc. Movable ion source assembly. 6,331,713, Cl. 250-497.100.

Smith & Wesson Corp.: *See—*
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Smith, Bart A.: *See—*
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Smith International, Inc.: *See—*
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Smith, Martin Phillip, to Gersan Establishment. Examining a diamond. 6,331,708, Cl. 250-483.100.

Smith, N. Duane: *See—*
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Summa, Gareth D.; and Smith, N. Duane, 6,330,953, Cl. 213-62.00R.

Smith, Patrick J: *See—*
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Smith, Paul F., to Motorola, Inc. Wideband data converter with adaptive segment shuffling. 6,331,834, Cl. 341-155.000.

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Smith, Robin A. J.: *See—*
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Smith, Scott; Smith, Dean; and O'Lenick, Anthony J., Jr., to Colonial Chemical INC. Dimer amidopropyl dimethyl phospholipids as barrier compounds. 6,331,293, Cl. 424-59.000.

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SmithKline Corporation p.l.c.: *See—*
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Societe Nationale d'Etude et de Construction de moteurs d'Aviation - Snecma: *See—*
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SOCO, Inc.: *See—*
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Softbook Press, Inc.: *See—*
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Sokolov, Michael: *See—*
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Solana Technology Development Corporation: *See—*
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Solbakken, Magne: *See—*
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Solutia Inc.: *See—*
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Solvay Pololefins Europe-Belcium: *See—*
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Sonenshine, Daniel E.: *See—*
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Song, Bang-Sup; and Bugeja, Alex R., to Rockwell Technologies LLC. Self-trimming current source and method for switched current source DAC. 6,331,830, Cl. 341-121.000.

Song, Chang-Iyoung: *See—*
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Southeast University: *See—*
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Southerland, Bobby Ray; Hsueh, Jin-Hong; Herman, Lace J.; and Purkett, John C., to Maxtor Corporation. Method of correcting a read error in a disk drive. 6,332,207, Cl. 714-763.000.

Spaderna, Dieter; Roberts, Michael; and Sabha, Raed, to Sharp Electronics Corporation; and Sharp Kabushiki Kaisha. System on chip (SOC) four-way switch crossbar system and method. 6,331,977, Cl. 370-360.000.

Spallek, Michael: *See—*
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Spannagel, Wilfried; Diedrich, Karin; Dudda, Olaf; and Baseler, Christian, to Sartorius AG. Drying balance with temperature calibration disk. 6,331,683, Cl. 177-245.000.

Sparico, Thomas M.: *See—*
Walker, Jay S.; Jorasch, James A.; and Sparico, Thomas M., 6,331,144, Cl. 463-20.000.

Sparks, David L.: *See—*
Cornelius, Charles S.; Counts, Richard H.; Myers, W. Neill; Lackey, Jeffrey D.; Peters, Warren; Shadoan, Michael D.; Sparks, David L.; and Lawrence, Timothy W., 6,330,792, Cl. 60-257.000.

Spatafora, Mario, to G.D Societa' per Azioni. Conveyor. 6,330,940, Cl. 198-594.000.

Specht, Martin, to Breed Automotive Technology, Inc. Apparatus for adjusting the inclination of a backrest of a vehicle seat. 6,331,034, Cl. 297-362.110.

Spell, Dave: *See—*
Bennington, Gerard E.; Backer, George; Green, Shawn; Cooper, Bill; Spell, Dave; Rogers, Rosetta; and Davis, Bruce, 6,331,877, Cl. 348-731.000.

Spencer, Norman: *See—*
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Spice-Kopischke, Joel: *See—*
Molano, Rafael; Gianfagna, Lawrence; Roth, Douglas E.; Kurtek, Ed; Goulet, Alan; Symonds, Robert D.; Gill, Robert Bradley; Biwer, William; Walsh, Mike; Welsh, Julie; Gebhard, Richard; and Spice-Kopischke, Joel, 6,330,978, Cl. 235-492.000.

Spicer, Victor L.: *See—*
Krutchinsky, Andrew N.; Loboda, Alexandre V.; Spicer, Victor L.; Ens, Werner; and Standing, Kenneth G., 6,331,702, Cl. 250-281.000.

Spiers, Christopher W.: *See—*
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Spillman, William B., Jr.: *See*—
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Spinal Concepts, Inc.: *See*—
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Spincor LLC: *See*—
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Spinnler, Fritz; and Zanetti, Claudio, to CRT Common Rail Technologies AG. High-pressure injection system with common rail. 6,330,876, Cl. 123-456.000.

Spitaletta, Edward C.: *See*—
Spitaletta, Robert E.; and Spitaletta, Edward C., 6,332,074, Cl. 455-407.000.

Spitaletta, Robert E.; and Spitaletta, Edward C. Nonreusable cellular telephone and method of making cellular telephone calls. 6,332,074, Cl. 455-407.000.

Spohn, Bill: *See*—
Hung, Mien-Chie; Yan, Duen-Hwa; Wen, Yong; and Spohn, Bill, 6,331,284, Cl. 424-1.110.

Sporrer, Scott: *See*—
Carr, Brian W.; Handorf, Donald F.; Sporrer, Scott; Jensen, Ryan D.; Merfeld, Nick; and Mathis, Mark D., 6,330,767, Cl. 52-192.000.

Springer, Dirk: *See*—
Bohlander, Ralf; Jaensch, Sven; and Springer, Dirk, 6,331,607, Cl. 528-312.000.

Square D Company: *See*—
Abroy, Hamid S.; Greer, David E.; and Leppla, John K., 6,331,684, Cl. 200-17.00R.

Sriram, Sundararajan, to Texas Instruments Incorporated. Circuits system and methods for synchronization word detection in bitstream communications apparatus. 6,331,976, Cl. 370-350.000.

Srivastava, Ashutosh: *See*—
McDonough, William; Rao, Srinivasa; and Srivastava, Ashutosh, 6,330,858, Cl. 101-208.000.

St. Jude Children's Research Hospital: *See*—
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Stager, Bradley R.: *See*—
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Stagg, Arthur J.: *See*—
Baskey, Michael E.; Brice, Frank W.; Glassen, Steven G.; Hefferon, Eugene P.; Ratcliff, Bruce H.; Stagg, Arthur J.; and Valley, Stephen R., 6,332,171, Cl. 710-39.000.

Stamatis, Peter Joseph: *See*—
DeCristofaro, Nicholas John; and Stamatis, Peter Joseph, 6,331,363, Cl. 428-692.000.

Stamper, Anthony K.; and McGahay, Vincent J., to International Business Machines Corporation. Damascene etchback for low ϵ dielectric. 6,331,481, Cl. 438-626.000.

Standing, Kenneth G.: *See*—
Krutchinsky, Andrew N.; Loboda, Alexandre V.; Spicer, Victor L.; Ens, Werner; and Standing, Kenneth G., 6,331,702, Cl. 250-281.000.

State of Israel, Atomic Energy Commission: *See*—
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Steagall, Robert W: *See*—
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Steber, Charles Evan; Morton, Harmon Lindsay; and McLeroy, Jacob Tussey, to General Electric Company. External dilution air tuning for dry low NO_x combustors and methods therefor. 6,331,110, Cl. 431-352.000.

Steelcase Development Corporation: *See*—
MacDonald, Douglas B.; King, Jonathan J.; Sanders, Steven E.; Rheault, Alan E.; Dykstra, James R.; Waalkes, Michael L.; Walz, David A.; Williams, Patricia A.; Gravel, Donald P.; and Chang, Joseph, 6,330,773, Cl. 52-239.000.

Steelman, Clifton V. Convertible garment. 6,330,720, Cl. 2-93.000.

Steenson, James Henry, Jr.; and Amsbury, Burl, to Deka Products Limited Partnership. Apparatus and method for a pitch state estimator for a personal vehicle. 6,332,103, Cl. 701-1.000.

Steinbach, Christian: *See*—
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Steinmetz, Charles R.: *See*—
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Steinmetz, Gregory T.: *See*—
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Stempel, Robert C.: *See*—
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Stephens, Andrew: *See*—
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Stephenson, Christopher J.: *See*—
Rickards, Allan R.; Brannon, Harold D.; Rae, Philip J.; DiLullo, Gino A.; and Stephenson, Christopher J., 6,330,916, Cl. 166-280.000.

Stephenson, Dwight, to Husco International, Inc. Hydraulic system with shadow poppet valve. 6,330,798, Cl. 60-424.000.

Stern, Henry J. Nuclear decay laser and method. 6,331,774, Cl. 324-300.000.

Stern, Thomas E.: *See*—
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Sternberg, Ethan D.: *See*—
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Stettner, Martin; Grehl, Matthias; and Meyer, Horst, to W. C. Heraeus GmbH & Co. KG. Method for preparing gold of high purity. 6,331,200, Cl. 75-736.000.

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Huff, Jürgen; Steuerle, Ulrich; Meixner, Hubert; Ehle, Beate; Paulus, Wolfgang; Lux, Jürgen Alfred; and Häussling, Lukas, 6,331,519, Cl. 510-475.000.

Stevens, E. Henry; and Pfeiffer, Richard, to Semitool, Inc. Process for etching thin-film layers of a workpiece used to form microelectric circuits or components. 6,331,490, Cl. 438-754.000.

Stevens, James A.: *See*—
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Stewart, Thomas K.: *See*—
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Stiefel, James G.: *See*—
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Stier, Michael Andrew: *See*—
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St. Louis, Raymond Gerard: *See*—
Hahn, John Timothy; Venturino, Michael Barth; Berken, Bradley John; St. Louis, Raymond Gerard; and Datta, Paul Joseph, 6,330,735, Cl. 19-296.000.

STMicroelectronics N.V.: *See*—
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STMicroelectronics S.r.l.: *See*—
Ferrari, Paolo; Vigna, Benedetto; Montanini, Pietro; Castoldi, Laura; and Ferrera, Marco, 6,331,444, Cl. 438-52.000.
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Stockdaile, Larry D.: *See*—
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Storage Technology Corporation: *See*—
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Storms, Maurits M. N.: *See*—
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Stoughton, Robert S.: *See*—
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Stove, Andrew G.; Grewer, Ruediger; Carlsen, Ingwer; Svensson, Heino; Moennich, Karl-Juergan; Schmidt, Joachim; and Wendler, Thomas, to U.S. Philips Corporation. Projection display system. 6,331,848, Cl. 345-156.000.

Straessle, Richard: *See*—
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Strandberg, Ove: *See*—
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Stratos Lightwave, Inc.: *See*—
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Strauch, Martin, to Wera Werk Hermann Werner GmbH & Co. Chuck for bits or the like. 6,330,846, Cl. 81-477.000.

Streak Laboratories, Inc.: *See*—
Hengstenberg, Wayne R., 6,331,435, Cl. 436-10.000.

Strube, Karl. Magnetic auxiliary eyewear clip-on lenses. 6,331,057, Cl. 351-47.000.

Stryker Corporation: *See*—
Beckham, Scott; Emis, Dale; and Patel, Nilesh, 6,331,246, Cl. 210-136.000.
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Stuber, Alan L.: *See*—
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Sturgess, Ian C. C: *See*—
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Sturm, Edward A.: *See*—
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Su, Wei: *See*—
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Su, Yu T.: *See*—
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Subbiah, Ven. Methods of treating microbial infection and therapeutic formulations therefor. 6,331,551, Cl. 514-340.000.
Subramanian, Chelakara: *See—*
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Subramanian, Raghu: *See—*
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Suga, Nobuhiko: *See—*
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Sugamori, Shigeru, to Advantest Corp. Application specific event based semiconductor test system. 6,331,770, Cl. 324-158.100.
Sugen, Inc.: *See—*
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Sugimoto, Hiroyuki; Nakatsuji, Yoshihiro; and Hozumi, Hidetake, to Sumitomo Chemical Company, Limited. Thermoplastic elastomer composition and powder and molded article thereof. 6,331,360, Cl. 428-523.000.
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Sugitani, Hiroshi: *See—*
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Sugiyama, Kazuhiro: *See—*
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Sugiyama, Osamu, to Sony Corporation. Apparatus and method for mounting electronic parts. 6,331,225, Cl. 156-299.000.
Sugiyama, Yasuhiko; and Fujii, Toshiaki, to Seiko Instruments Inc. Section formation observing method. 6,331,712, Cl. 250-492.210.
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Sullivan, Daniel J.: *See—*
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Sumitomo Chemical Company, Limited: *See—*
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Sumitomo Chemical Limited., Co.: *See—*
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Summa, Gareth D.; and Smith, N. Duane, to Conveyor Technology Group Inc. Shock absorbing tow bar for trolley-type conveyor systems. 6,330,952, Cl. 213-62.00R.
Summa, Gareth D.; and Smith, N. Duane, to Conveyor Technology Group Inc. Shock absorbing tow bar for trolley-type conveyor systems. 6,330,953, Cl. 213-62.00R.
Sun Microsystems, Inc.: *See—*
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Sun, Minghua: *See—*
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Suzuki, Tamezo: *See—*
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Swayhoover, Robert D.; and Swayhoover, Patricia A. Device for supporting a camera on a surface. 6,330,992, Cl. 248-230.800.

Sylvester, Daniel: *See—*
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Symbol Technologies, Inc.: *See—*
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Symonds, Robert D.: *See—*
Molano, Rafael; Gianfagna, Lawrence; Roth, Douglas E.; Kurtek, Ed; Goulet, Alan; Symonds, Robert D.; Gill, Robert Bradley; Biwer, William; Walsh, Mike; Welsh, Julie; Gebhard, Richard; and Spice-Kopischke, Joel, 6,330,978, Cl. 235-492.000.

Synapse Group, Inc.: *See—*
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Synaptic Pharmaceutical Corporation: *See—*
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Systermans, Ralf, to Kone Corporation. Maintenance method for an elevator installation and elevator installation. 6,330,935, Cl. 187-391.000.

Szabo, John: *See—*
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Szekely, Istvan: *See—*
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Szonn, Bodo; and Kluge-Paletta, Werner, to Beiersdorf AG. Multilayer adhesive tape. 6,331,336, Cl. 428-40.100.

Ta, Thien D.: *See—*
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Tabata, Osamu: *See—*
Nishigaki, Futoshi; and Tabata, Osamu, 6,331,645, Cl. 558-39.000.

Tabuchi, Masahiro, to NEC Corporation. Method for matching distributed transactions and machine-readable recording medium with method programs. 6,332,160, Cl. 709-224.000.

Tachibana, Ikuko: *See—*
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Tachibana, Katsuro; and Uchida, Toshiki. Method of exciting photosensitive material. 6,332,095, Cl. 604-20.000.

Tachibana, Mitsuhiro: *See—*
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Taira, Yujiro: *See—*
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Taiwan Semiconductor Manufacturing Company: *See—*
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Taiwan Semiconductor Manufacturing Company, Ltd: *See—*
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Taiyo Yuden Co., Ltd.: *See—*
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Tajima, Hideji, to Precision System Science Co., Ltd. Magnetic material attracting/releasing pipette device and analyzer using pipette. 6,331,277, Cl. 422-100.000.

Tajima, Hiroki; Koizumi, Yutaka; Aono, Kiyomi; Abe, Tsutomu; Karita, Seiichiro; Okazaki, Takeshi; Omata, Kouichi; and Kubota, Masahiko, to Canon Kabushiki Kaisha. Ink jet recording head and a method of manufacture therefor. 6,331,051, Cl. 347-65.000.

Tajima, Ikuo, to Tokai Kogyo Mishin Kabushiki Kaisha. Sewing machine with improved frame drive device. 6,330,864, Cl. 112-470.180.

Takada, Akio, to Sony Corporation. Magnetoresistive head using a magnetoresistive element as a magnetic detector. 6,331,924, Cl. 360-323.000.

Takagi, Kazuhiko: *See—*
Yokota, Eiji; Hirose, Atsuo; Takagi, Kazuhiko; Kashima, Hiroyuki; and Makino, Kazumasa, 6,331,003, Cl. 271-290.000.

Takagi, Keiji: *See—*
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Takahara, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Reflection light absorbing plate and display panel for use in a display apparatus. 6,331,878, Cl. 349-5.000.

Takahashi, Daisuke: *See—*
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Takahashi, Hideki; Nishihara, Hidenori; Harada, Masana; and Minato, Tadaharu, to Mitsubishi Denki Kabushiki Kaisha. Insulated gate semiconductor device and manufacturing method thereof. 6,331,466, Cl. 438-268.000.

Takahashi, Keiichi: *See—*
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Takahashi, Koji; Shirota, Yuichi; Ban, Koichi; Sugi, Hikaru; Niimi, Yasuhiko; Kishita, Hiroshi; Yamanaka, Yasushi; and Naka, Masayoshi, to Denso Corporation. Vehicle air conditioning system. 6,330,909, Cl. 165-202.000.

Takahashi, Toshinari; and Nogami, Hiroyasu, to Kabushiki Kaisha Toshiba. Software distribution system and software utilization scheme for improving security and user convenience. 6,332,025, Cl. 380-281.000.

Takahashi, Yasuhiro: *See—*
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Takaku, Yutaka; and Ihshii, Toshio, to Hitachi, Ltd. Diagnostic equipment for an exhaust gas cleaning apparatus. 6,330,795, Cl. 60-277.000.

Takakuwa, Ikuo; Tanizaki, Toru; and Hiratsuka, Toshiro, to Murata Manufacturing Co., Ltd. Nonradiative dielectric waveguide resonator, nonradiative dielectric waveguide filter, duplexer and transceiver incorporating the same. 6,331,809, Cl. 333-135.000.

Takanashi, Hidefumi: *See—*
Ohnishi, Kazuhiko; Takanashi, Hidefumi; and Kawamoto, Yugen, 6,331,581, Cl. 523-221.000.

Takanashi, Seiji; Miyachi, Hiroshi; and Kanda, Koichiro, to SMC Corporation. Electric hand with cushioning mechanism. 6,331,758, Cl. 318-560.000.

Takase, Shigehiro: *See—*
Hori, Yasuhiro; Tsurumi, Yasuhisa; Takase, Shigehiro; Hatanaka, Hiroshi; Sakamoto, Kazutoshi; Hashimoto, Seiji; Ohki, Hidenori; Tojo, Takashi; Matsuda, Keiji; and Kawabata, Kohji, 6,331,521, Cl. 514-9.000.

Takayama, Hisashi, to Matsushita Electric Industrial Co., Ltd. Personal electronic settlement system, its terminal, and management apparatus. 6,332,133, Cl. 705-39.000.

Takeda, Genyo: *See—*
Van Hook, Timothy J.; Cheng, Howard H.; DeLaurier, Anthony P.; Gossett, Carroll P.; Moore, Robert J.; Shepard, Stephen J.; Anderson, Harold S.; Princen, John; Doughty, Jeffrey C.; Pooley, Nathan F.; Sheppard, Byron; Takeda, Genyo; and Kato, Shuhei, 6,331,856, Cl. 345-503.000.

Takeda, Yoshiharu: *See—*
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Takehara, Nobuyoshi; and Manabe, Naoki, to Canon Kabushiki Kaisha. Solar cell module having an overvoltage preventive element and sunlight power generation system using the solar cell module. 6,331,670, Cl. 136-244.000.

Takei, Hiroyuki; and Sakamoto, Takeshi, to Hitachi, Ltd. Sensor and measuring apparatus using the same. 6,331,276, Cl. 422-82.090.

Takemoto, Hitoshi: *See—*
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Tanaka, Hitoshi; Kobori, Masao; and Tachibana, Ikuko, to Fujitsu Limited. Testing apparatus and method for preventing a disk unit from being damaged. 6,332,203, Cl. 714-42.000.
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Taylor, Peter William; Luzio, John Paul; and Bryant, Jonathan Mark, to Endozyme Limited. Recombinant protein having bacteriophage endosialidase enzymatic activity. 6,331,425, Cl. 435-200.000.
Taylor, Thomas J.; Bristol, Derek C.; and Nedwick, Paul, to Johns Manville International, Inc.; and Rohm and Haas Company. Polycarboxy/polyol fiberglass binder of low pH. 6,331,350, Cl. 428-221.000.
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Teru, Suehachi; Miyano, Yasusada; Akita, Noboru; Otsuka, Kenji; and Shimada, Takashi, to Japan Pionics Co., Ltd. Process and apparatus for cleaning exhaust gas. 6,331,281, Cl. 423-237.000.

Terui, Nobuhiko: *See*—
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Tezuka, Hiroshi, to NEC Corporation. Multiplex transmission method and system. 6,331,989, Cl. 370-535.000.

Thai, Douglas. Bubble generating assemblies. 6,331,130, Cl. 446-15.000.

Thelen, Robert M.: *See*—
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Thermo-Roll Window Corp.: *See*—
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Thern, Holger F.; and Chen, Songhua, to Baker Hughes Incorporated. Gas zone evaluation by combining dual wait time NMR data with density data. 6,331,775, Cl. 324-303.000.

Thielen, Alain; Valange, Baudouin; and Viering, Stefan, to Cabot Corporation. Conductive polymer blends with finely divided conductive material selectively localized in continuous polymer phase or continuous interface. 6,331,586, Cl. 524-401.000.

Thin Film Module, Inc.: *See*—
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Thomas & Betts International, Inc.: *See*—
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Thomas, Brian; Beaufils, Jean-Marc; Cogan, Adrian; Dallemange, Bernard; Gozlan, Gilles; Luan, Jiyuan; Thornton, Neill; and Toth, James, to Tyco Electronics Corporation. Devices and methods for protection of rechargeable elements. 6,331,763, Cl. 320-136.000.

Thomas Industries Inc.: *See*—
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Thomas Jefferson University: *See*—
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Thomas, Terence M.: *See*—
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Thompson, Gary. Lamp having multi-colored radiant output. 6,331,750, Cl. 313-113.000.

Thompson, Gary: *See*—
Becker, Neil M.; Clarke, Duncan; Peterson, Chuck; Quinones, Albert A.; Haldeman, Paul; Armstrong, Kenneth K.; Wilson, Victor; Wilson, Bruce; Thompson, Gary; and Colvan, William P., 6,331,176, Cl. 604-533.000.

Thompson, Lorin Andrew: *See*—
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Thornton, Jeffrey Wilson: *See*—
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Thornton, Neill: *See*—
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Thornton, Troy; Chan, Randy S.; and Lau, Lilip, to Gore Enterprise Holdings, Inc. Kink resistant bifurcated prosthesis. 6,331,187, Cl. 623-1.130.

Thyberg, Johan: *See*—
Nordstedt, Christer; Näslund, Jan; Thyberg, Johan; Tjernberg, Lars O.; and Terenius, Lars, 6,331,440, Cl. 436-501.000.

Tieben, David Patrick: *See*—
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Tiefenbrun, Jonathan; and Wilk, Peter J. Medical twisting device and method for forming a surgical closure. 6,331,182 Cl. 606-144.000.

Tierney, Michael J.; Cooper, Thomas G.; Julian, Chris A.; Blumenkranz, Stephen J.; Guthart, Gary S.; and Younge, Robert G., to Intuitive Surgical, Inc. Surgical robotic tools, data architecture, and use. 6,331,181, Cl. 606-130.000.

Tineke Charlotte Kouwenberg: *See*—
Kouwenberg, Tineke C; Kouwenberg, Robert J; Petersen, Soren; Wall, Michael T; Morgan, David L; and Loughnane, Cathal, 6,330,808, Cl. 62-372.000.

Ting, Vincent Wen-Hwa: *See*—
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Tippmann-Krayer, Petra: *See*—
Harth, Arno; Tippmann-Krayer, Petra; Holzner, Peter; Korte, Werner; Schrodi, Karl; and Klug, Andreas, 6,331,981, Cl. 370-395.100.

Titizian, John H.; Burger, Jeffrey A.; and Kim, Young H., to Integra Technologies, Inc. Radio frequency power device improvement. 6,331,931, Cl. 361-306.300.

Tjernberg, Lars O.: *See*—
Nordstedt, Christer; Näslund, Jan; Thyberg, Johan; Tjernberg, Lars O.; and Terenius, Lars, 6,331,440, Cl. 436-501.000.

Tochigi Fuji Sangyo Kabushiki Kaisha: *See*—
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Todaro, Frank A.: *See*—
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Toge, Tetsuo; Komatsubara, Michiro; Honda, Atsuhito; Sadahiro, Kenichi; and Senda, Kunihiro, to Kawasaki Steel Corporation. Process for producing grain-oriented electromagnetic steel sheet. 6,331,215, Cl. 148-111.000.

Toji, Kazuya: *See*—
Shimada, Takeshi; Nishikawa, Kazuhiro; and Toji, Kazuya, 6,331,498, Cl. 501-135.000.

Tojo, Takashi: *See*—
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Tojyou, Tutomu; Shirai, Shoji; and Kato, Shinichi, to Hitachi, Ltd. Color cathode ray tube having a low dynamic focus voltage. 6,331,752, Cl. 313-441.000.

Tokai Kogyo Mishin Kabushiki Kaisha: *See*—
Tajima, Ikuo, 6,330,864, Cl. 112-470.180.

Tokairin, Yoshiichi: *See*—
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Tokuda, Katsuhiko, to Kawasaki Jukogyo Kabushiki Kaisha. Tire slip control device. 6,330,927, Cl. 180-197.000.

Tokuhara, Koki: *See*—
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Tokuhashi, Yuki; and Shimada, Naoto, to Olympus Optical Company Ltd. Image display system. 6,331,841, Cl. 345-8.000.

Tokunaga, Masashi: *See*—
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Tokunaga, Tsutomu: *See*—
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Tokuyasu, Jin; Isoue, Koichiro; Nagareda, Katsushi; and Onishi, Takashi, to Kuraray Co., Ltd. Method for manufacturing aminoalcohol. 6,331,650, Cl. 564-463.000.

Tokyo Electron Limited: *See*—
Hiroki, Tsutomu, 6,331,095, Cl. 414-222.010.
Ishizuka, Hotaka; and Tachibana, Mitsuhiro, 6,331,483, Cl. 438-648.000.
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Tokyo Kikai Seisakusho, Ltd.: *See*—

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Tolbert, John W, Jr.: *See—*
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Tomishima, Shigeki: *See—*
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Tomita, Mamoru; Sotoyama, Kazuyoshi; Watanabe, Ryozo; Mizuguchi, Kenji; Shidara, Hideo; Wakao, Shoji; Hattori, Masanori; and Motoyoshi, Nobuyuki, to Morinaga Milk Industry Co., Ltd. Soybean curd puree, and process and apparatus for preparing the same. 6,331,324, Cl. 426-634.000.
Tomiya, Kanji: *See—*
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Tompkins, Wayne; Tompkins, Mary; and Yang, Joo-Sung, to North Carolina State University. Nucleic acids obtained from the envelope coding region of feline immunodeficiency virus molecular clone designated JSY3. 6,331,616, Cl. 536-23.720.
Tonietto, David, to Conexant Systems, Inc. Circuit and method for unlimited range frequency acquisition. 6,331,792, Cl. 327-48.000.
Topits, Kirk: *See—*
Hanson, Dan A.; and Topits, Kirk, 6,332,085, Cl. 455-557.000.
Topliffe, Douglas A.: *See—*
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Topliffe, Roger Ogden: *See—*
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Toray Industries, Inc.: *See—*
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Toyota Jidosha Kabushiki Kaisha: *See—*
Jufuku, Yasunobu; Ueno, Makoto; Hirooka, Akihiko; Imai, Yasuo; and Furukubo, Tatsumi, 6,330,871, Cl. 123-193.300.
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TradeAccess, Inc.: *See—*
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Transaction Technology, Inc.: *See—*
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Lederman, Seth; Chess, Leonard; and Yellin, Michael J., 6,331,615, Cl. 536-23.530.
TRW Inc.: *See—*
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Tsai, Chia-Shiung; Cheng, Yao-Yi; and Tao, Hun-Jan, to Taiwan Semiconductor Manufacturing Company. Method to improve adhesion between an overlying oxide hard mask and an underlying low dielectric constant material. 6,331,480, Cl. 438-624.000.
Tsai, Siao Ping: *See—*
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Tsuji, Katsuyuki; Jones, Christopher W.; and Davis, Mark E., to California Institute of Technology. Functionalized molecular sieves. 6,331,500, Cl. 502-63.000.
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Tsukude, Masaki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having data parallel/serial conversion function and capable of efficiently performing operational test. 6,331,958, Cl. 365-201.000.
Tsumura, Makoto: *See—*
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Tsunoda, Kyoko; and Tamura, Takaaki. Tin-indium alloy electroplating solution. 6,331,240, Cl. 205-254.000.
Tsunoda, Takeshi; and Mitsumune, Shinji, to BASF NOF Coatings Co., Ltd. Method for forming coating film and coating composition. 6,331,326, Cl. 427-202.000.
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Tuerk, Craig: *See*—
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Tuloup, Remy; Dalko, Maria; and Rubinstenn, Gilles, to L'Oreal. Retinyl carbonate derivatives, preparation process and uses. 6,331,535, Cl. 514-182.000.

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Kauschke, Michael; and Turi, Mordechai, 6,331,345, Cl. 428-156.000.

Turner, Josephine; and Cheng, Yu-Ling. Process for preparing interpenetrating polymer networks of controlled morphology. 6,331,578, Cl. 523-105.000.

Turner, Stephen P., to Honeywell International Inc. Tantalum sputtering target with fine grains and uniform texture and method of manufacture. 6,331,233, Cl. 204-298.130.

Turner, Tim L.; and Hurst, Robert L., to Rexam Beverage Can Company. Can end with emboss and deboss score panel stiffening beads. 6,330,954, Cl. 220-269.000.

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Turturro, Vincent; Francese, Jose L.; Gottlieb, Saul; and Kortenbach, Juergen, to Scimed Life Systems, Inc. Biopsy instrument having irrigation and aspiration capabilities. 6,331,165, Cl. 600-562.000.

TV Guide Magazine Group, Inc.: *See*—
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Tyco Electronics Corporation: *See*—
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Typaldos, Melanie D., to Advanced Micro Devices, Inc. UART automatic parity support for frames with address bits. 6,332,173, Cl. 710-106.000.

Überreiter, Andreas: *See*—
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Uchida, Toshiki: *See*—
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Uchino, Hiroshi: *See*—
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Uchiyama, Kenichi; Kurihara, Kiyokazu; and Yuri, Hidetaka, to Sumitomo Wiring Systems, Ltd. Method of determining the length of electric wires for use in constructing a wire harness, and method of constructing a wire harness. 6,330,746, Cl. 29-872.000.

Uebaba, Kazuo: *See*—
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Ueda, Tomohiko: *See*—
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Ueki, Koji; and Osako, Takashi, to Oki Electric Industry Co., Ltd. Brush scrubbing apparatus. 6,330,728, Cl. 15-77.000.

Uemura, Toshiya, to Toyoda Gosei Co., Ltd. Method of manufacturing semiconductor device using group III nitride compound. 6,331,450, Cl. 438-114.000.

Ueno, Makoto: *See*—
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Ullah, Ismat; and Wiley, Gary J., to Bristol-Myers Squibb Company. Enteric coated pharmaceutical tablet and method of manufacturing. 6,331,316, Cl. 424-482.000.

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Lee, James M.; Ullrich, Axel; and Singh, Arjun, 6,331,609, Cl. 530-324.000.

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Uniteam ASA: *See*—
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United Microelectronics Corp.: *See*—
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Lee, Tzung-Han; and Tan, Wayne, 6,331,471, Cl. 438-396.000.
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U.S. Filter Corporation: *See*—
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Army: *See*—
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Sampayan, Stephen E.; Krogh, Michael L.; Davis, Steven C.; Decker, Derek E.; Rosenblum, Ben Z.; Sanders, David M.; and Elizondo-Decanini, Juan M., 6,331,194, Cl. 29-25.030.
Health and Human Services: *See*—
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National Aeronautics and Space Administration: *See*—
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National Security Agency: *See*—
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Cipolla, Jeffrey L., 6,330,866, Cl. 114-238.000.
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Wright, Dexter V.; and Weinert, Robert, 6,330,741, Cl. 29-600.000.

U.S. Philips Corporation: *See*—
Augustin, Andreas, 6,330,983, Cl. 242-332.400.
Brown, Adam R.; Hueting, Raymond J. E.; and Hurkx, Godefridus A. M., 6,331,467, Cl. 438-270.000.
Dirksen, Peter; and Juffermans, Casparus A. H., 6,331,368, Cl. 430-5.000.
Gedl, Karl; Friedreich, Willibald; Schuhmacher, Thomas; and Überreiter, Andreas, 6,332,056, Cl. 386-21.000.
Koster, John; and Bosveld, Frank, 6,331,876, Cl. 348-725.000.
Makram-Ebeid, Shérif; and Philip, Matthieu, 6,332,034, Cl. 382-128.000.
Rogatschnig, Johann, 6,331,686, Cl. 200-302.200.
Stove, Andrew G.; Grewer, Ruediger; Carlsen, Ingwer; Svensson, Heino; Moennich, Karl-Juergan; Schmidt, Joachim; and Wendler, Thomas, 6,331,848, Cl. 345-156.000.
Van Den Brink, Johan S.; and Van Muiswinkel, Arianne M. C., 6,331,777, Cl. 324-312.000.
Van Den Enden, Adrianus W. M.; and Suermondt, Rutgerus E. E. F., 6,332,151, Cl. 708-313.000.
Widdershoven, Franciscus P.; Annema, Anne J.; Storms, Maurits M. N.; and Pelgrom, Marcellinus J. M., 6,331,947, Cl. 365-185.080.
Wielstra, Ytsen; and Winkel, Jolanda H. S., 6,331,206, Cl. 106-287.130.

United States Pipe and Foundry Company, Inc.: *See*—
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United States Surgical Corporation: *See*—
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U.S.A. Kaifa Technology, Inc.: *See*—
Au-Yeung, Vincent; Guo, Qing-Dong; and Wang, Xing Long, 6,331,912, Cl. 359-484.000.

United Technologies Corporation: *See*—
Van Duyn, Keven G., 6,331,078, Cl. 384-498.000.

Universite Laval: *See*—
Papadopoulou, Barbara; Ouellette, Marc; and Olivier, Martin, 6,331,304, Cl. 424-269.100.

University Advanced Bio-imaging Associates: *See*—
Conti, Peter S.; Alauddin, Mian M.; and Fissekis, John D., 6,331,287, Cl. 424-1.890.

University of British Columbia, The: *See*—
Dolphin, David; Peng, Xuejun; and Sternberg, Ethan D., 6,331,235, Cl. 204-451.000.

University of California: *See*—

Hirth, Klaus P.; Mann, Elaina; Shawyer, Laura K.; Ullrich, Axel; Szekely, Istvan; Bajor, Tamas; Haimichael, Janis; Orfi, Laszlo; Levitzki, Alex; Gazit, Aviv; Tang, Peng Cho; and Lammers, Reiner, 6,331,555, Cl. 514-378.000.

University of California, The Regents of the: *See—*
Johnson, Paul A.; TenCate, James A.; Guyer, Robert A.; and Van Den Abeele, Koen E. A., 6,330,827, Cl. 73-579.000.
Manjunath, B. S.; Chae, Jong Jin; Mukherjee, Debargha; and Mitra, Sanjit K., 6,332,030, Cl. 382-100.000.
Orr, Christopher Henry; Luff, Craig Janson; Dockray, Thomas; Macarthur, Duncan Whittemore; Bounds, John Alan; and Koster, James E., 6,331,706, Cl. 250-385.100.
Orr, Christopher Henry; Luff, Craig Janson; Dockray, Thomas; and Macarthur, Duncan Whittemore, 6,331,707, Cl. 250-387.000.
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University of Dundee, The: *See—*
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University of Florida: *See—*
Allan, Sandra Anne; Sonenshine, Daniel E.; and Burridge, Michael John, 6,331,297, Cl. 424-84.000.

University of Hawaii: *See—*
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University of Illinois, The Board of Trustees of the: *See—*
Basu, Samit; and Bresler, Yoram, 6,332,035, Cl. 382-128.000.
Radulovacki, Miodrag; and Carley, David W., 6,331,536, Cl. 514-214.020.
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University of Iowa Research Foundation: *See—*
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University of Manitoba: *See—*
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University of Michigan, The Regents of the: *See—*
Aylott, Jonathan W.; Chen-Esterlit, Zoe; Friedl, Jon H.; Kopelman, Raoul; Savvateev, Vadim N.; and Shinar, Joseph, 6,331,438, Cl. 436-172.000.
Livant, Donna L., 6,331,409, Cl. 435-29.000.

University of Nebraska, Board of Regents of the: *See—*
Zhu, Qiuming, 6,332,037, Cl. 382-173.000.

University of New Orleans Foundations: *See—*
Baglin, John Edward Eric; Kellock, Andrew John; Terris, Bruce David; Weller, Dieter Klaus; and Folks, Liesl, 6,331,364, Cl. 428-694.00T.

University of North Carolina at Chapel Hill, The: *See—*
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University of Otago: *See—*
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University of Ottawa: *See—*
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University of Southern California: *See—*
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University Technologies International Inc.: *See—*
Roy, Surajit; Pruden, Barry; Adris, Alaa; and Grace, John, 6,331,283, Cl. 423-652.000.

Uno, Masaki; and Hattori, Naoki, to Hitachi, Ltd. Refrigerating unit. 6,330,804, Cl. 62-175.000.

Unosson, Anders: *See—*
Lundgren, Staffan; Jobson, Edward; Unosson, Anders; and Salomonsson, Per, 6,331,232, Cl. 204-265.000.

Untersander, Walter: *See—*
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Upchurch, Billy T.: *See—*
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Upjohn Company, The: *See—*
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Uramune, Hidekazu: *See—*
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Berry, Robert Francis; Hussain, Riaz Y.; John, Chester Charles, Jr.; Levine, Frank Eliot; and Urquhart, Robert John, 6,332,117, Cl. 702-187.000.

Ushiyama, Masashi, to Chisso Corporation. Culture medium for microorganisms. 6,331,429, Cl. 435-243.000.

Uskokovic, Milan Radoje: *See—*
Batcho, Andrew David; Hennessy, Bernard Michael; and Uskokovic, Milan Radoje, 6,331,642, Cl. 552-653.000.

USX Corporation: *See—*
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UT-Battelle, LLC: *See—*
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Uz, Kamil Metin: *See—*
de Garrido, Diego P.; Uz, Kamil Metin; Kohn, Leslie D.; and LeGall, Didier, 6,331,874, Cl. 348-452.000.

Uzoh, Cyprian E.: *See—*
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Vaananen, Pasi: *See—*
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Vaidyanathan, Ramachandran: *See—*
Feldman, Martin; El-Amawy, Ahmed A.; and Vaidyanathan, Ramachandran, 6,332,050, Cl. 385-24.000.

Valange, Baudouin: *See—*
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Valley, Stephen R.: *See—*
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Vanbuskirk, Ronald E.: *See—*
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Van Den Abeele, Koen E. A.: *See—*
Johnson, Paul A.; TenCate, James A.; Guyer, Robert A.; and Van Den Abeele, Koen E. A., 6,330,827, Cl. 73-579.000.

VandenBoom, Robert M., to CTS Corporation. Integrated surface-mount pointing device. 6,331,849, Cl. 345-161.000.

Van Den Brink, Johan S.; and Van Muiswinkel, Arianne M. C., to U.S. Philips Corporation. Magnetic resonance method and device. 6,331,777, Cl. 324-312.000.

Van Den Enden, Adrianus W. M.; and Suermondt, Rutgerus E. E. F., to U.S. Philips Corporation. Time discrete filter. 6,332,151, Cl. 708-313.000.

Vanderbilt University: *See—*
Carroll, Frank E.; Traeger, Robert H.; Mendenhall, Marcus H.; Waters, James W.; Edwards, Glenn; and Brau, Charles A., 6,332,017, Cl. 378-119.000.

Van Dine, Leslie L.; and Grasso, Albert P., to International Fuel Cells LLC. Operating system for a fuel cell power plant. 6,331,366, Cl. 429-17.000.

Van Duyn, Keven G., to United Technologies Corporation. Turbine engine bearing. 6,331,078, Cl. 384-498.000.

Van Hook, Timothy J.; Cheng, Howard H.; DeLaurier, Anthony P.; Gossett, Carroll P.; Moore, Robert J.; Shepard, Stephen J.; Anderson, Harold S.; Princen, John; Doughty, Jeffrey C.; Pooley, Nathan F.; Sheppard, Byron; Takeda, Genyo; and Kato, Shuhei, to Nintendo Co., Ltd.; and Silicon Graphics, Inc. Video game system with coprocessor providing high speed efficient 3D graphics and digital audio signal processing. 6,331,856, Cl. 345-503.000.

van Melle, William J.: *See—*
Moran, Thomas P.; van Melle, William J.; Kurtenbach, Gordon P.; and Chiu, Patrick, 6,332,147, Cl. 707-500.100.

Van Muiswinkel, Arianne M. C.: *See—*
Van Den Brink, Johan S.; and Van Muiswinkel, Arianne M. C., 6,331,777, Cl. 324-312.000.

Van Peppen, Jacobus Cornelis Leonardus: *See—*
Klaassen, Klaassen Berend; and Van Peppen, Jacobus Cornelis Leonardus, 6,331,919, Cl. 360-46.000.

Van Vliet, Johannes Petrus: *See—*
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Van Voris, Peter; and Cataldo, Dominic A., to Battelle Memorial Institute. Method and apparatus for providing long term protection from intrusion by insects and other cold blooded animals. 6,331,308, Cl. 424-411.000.

Vanzanella, Fortunato: *See—*
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Varn Products Company, Inc.: *See—*
Jakobsen, James W.; Crespo, Carlito; and Hayes, Thomas, 6,330,859, Cl. 101-484.000.

Vassilieva, Irina Ivanovna: *See—*
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Veber, Daniel Frank: *See—*
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Vekris, Evangellos; Patel, Nainesh J.; and Hanabe, Murali, to Ball Semiconductor, Inc. Doping of spherical semiconductors during non-contact processing in the liquid state. 6,331,477, Cl. 438-542.000.

Vella, Mark: *See—*
Langseth, Bjorn; Spiers, Christopher W.; Vella, Mark; and Patel, Dinesh R., 6,330,913, Cl. 166-250.010.

Venkatesan, Aranapakam Mudumbai; Grosu, George Theodore; and Baker, Jannie Lea. N-Hydroxy-2-(Alkyl, Aryl, or Heteroaryl, Sulfanyl, Sulfinyl or Sulfonyl)-3-Substituted Alkyl, Aryl or Heteroarylamides as Matrix Metalloproteinase inhibitors. 6,331,563, Cl. 514-459.000.

Venturino, Michael Barth: *See—*
Hahn, John Timothy; Venturino, Michael Barth; Berken, Bradley John; St. Louis, Raymond Gerard; and Datta, Paul Joseph, 6,330,735, Cl. 19-296.000.

Verdicom, Inc.: *See—*
Gall, Peter J., 6,331,452, Cl. 438-127.000.

Verdonk, Timothy C., to Nortel Networks Limited. Use of distinctive ringing in a wireless communication system to inform a called party of an increased billing rate. 6,332,075, Cl. 455-408.000.

Verieger, Jobst: *See—*
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Veris Industries, Inc.: *See—*
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Verma, Vani: *See—*
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Verner, Erik Joel: *See—*
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Vernon, Matthew F., to Etec Systems, Inc. Correction for systematic, low spatial frequency critical dimension variations in lithography. 6,331,711, Cl. 250-492.200.

Veyret, Jean-Bernard: *See—*
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Viaud, Fabrice: *See—*
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Vickers, Incorporated: *See—*
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Vidaurri, Fernando C.; Geibel, Jon F.; Waterman, James W.; Chaffin, Jay M.; South, Aubrey, Jr.; Fodor, Jeffrey S.; and Kile, Glenn F., to Phillips Petroleum Company. Process for producing poly(arylene sulfide). 6,331,608, Cl. 528-388.000.

Viering, Stefan: *See—*
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Vigna, Benedetto: *See—*
Ferrari, Paolo; Vigna, Benedetto; Montanini, Pietro; Castoldi, Laura; and Ferrera, Marco, 6,331,444, Cl. 438-52.000.

Viken, James P. Complete fluid exchange system for automatic transmissions. 6,330,934, Cl. 184-1.500.

Villaraut, Sandro. Cleaner calculator. 6,330,969, Cl. 235-64.700.

Villemazet, Jean-Francois: *See—*
Prieto, Didier; Rogeaux, Eric; Villemazet, Jean-Francois; and Parra, Thierry, 6,331,807, Cl. 333-128.000.

Vines, Landon: *See—*
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Viola, Frank J.: *See—*
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Virtanen, Jorma, to Burstein Technologies, Inc. Spatially addressable, cleavable reflective signal elements, assay device and method. 6,331,275, Cl. 422-68.100.

Vishakhadatta, Diwakar: *See—*
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Visteon Global Technologies, Inc.: *See—*
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VISX, Incorporated: *See—*
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Vivo S.r.l.: *See—*
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Vocaltec Communications Ltd.: *See—*
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Vodrahalli, Nagesh: *See—*
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Voegele, Michael: *See—*
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Vogel, John: *See—*
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Vogt, Christian: *See—*
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Voldman, Steven H., to International Business Machines Corporation. SOI voltage dependent negative-saturation-resistance resistor ballasting element for ESD protection of receivers and driver circuitry. 6,331,726, Cl. 257-541.000.

Volkert, Otto; and Pittrich, Klaus, to BASF Aktiengesellschaft. Process for producing elastic polyurethane moldings with compact surfaces and cellular cores. 6,331,577, Cl. 521-159.000.

Volvo Car Corporation: *See—*
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Volvo Lastvagnar AB: *See—*
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von Hoffmann, Gerard: *See—*
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von Seelen, Ulf Cahn: *See—*
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Voytas, Daniel F.: *See—*
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Vrabel, Mark E.: *See—*
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Vrijburg, Gerben O.: *See—*
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W. C. Heraeus GmbH & Co. KG: *See—*
Stettner, Martin; Grehl, Matthias; and Meyer, Horst, 6,331,200, Cl. 75-736.000.

Waalkes, Michael L.: *See—*
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Waatti, Kurt J.; and Kuhajek, Eugene J., to Rohm and Haas Company. Water softener salt formulation. 6,331,261, Cl. 252-184.000.

Wachs, Israel E.; and Briand, Laura E., to Lehigh University. In-situ formation of metal-molybdate catalysts. 6,331,503, Cl. 502-305.000.

Wachter, Eric A.: *See—*
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Wacker, Dean A.: *See—*
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Wada, Kazuo: *See—*
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Wagaman, Kerry L., to United States of America, Navy. Gas-generating liquid compositions (PERSOL 2). 6,331,220, Cl. 149-45.000.

Wagner, Alain: *See—*
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Wagner, Erik J.: *See—*
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Wagner, Justin S., to Sentinel Holding, Inc. High speed modular jack. 6,331,126, Cl. 439-676.000.

Wagner, Marcus, to International Business Machines Corporation. Method for providing an improved run-length encoding algorithm for data compression. 6,331,826, Cl. 341-59.000.

Wagner, Philip C: *See—*
Loprete, Joseph F.; Young, Michael R; Tolbert, John W, Jr.; Monk, David T; Wagner, Philip C; Hill, Joe T; Pippin, Larry; and Peters, Robert B., 6,331,925, Cl. 361-22.000.

Wagner Spray Tech Corporation: *See—*
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Wahl, Oliver: *See—*
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Wahl, Rick W.: *See—*
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Wakao, Shoji: *See—*
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Wakayama, Teruhiko; and Yanagimachi, Ryuzo, to University of Hawaii. Cumulus cells as nuclear donors. 6,331,659, Cl. 800-24.000.

Wake, Robert H.; Grable, Richard J.; and Kasibhatla, Sastry L. A., to Imaging Diagnostic Systems, Inc. Detector array variable gain amplifiers for use in a laser imaging apparatus. 6,331,700, Cl. 250-208.100.

Wakenight, Robert Leslie: *See—*
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Wakisako, Hitoshi: *See—*
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Wako Pure Chemical Industries, Ltd.: *See—*
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Wakui, Yoko: *See—*
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Waldspurger, Carl A.: *See—*
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Walker Digital, LLC: *See—*
Walker, Jay S.; Jorasch, James A.; and Sparico, Thomas M., 6,331,144, Cl. 463-20.000.

Walker, Frederick Herbert, to Air Products and Chemicals, Inc. Acid catalyzed polymerization of aqueous epoxy resin emulsions and uses thereof. 6,331,583, Cl. 523-404.000.

Walker, James D.: *See*—
Digman, Michael J.; Walker, James D.; and Bennett, James, 6,330,782, Cl. 56-15.800.

Walker, Jay S.; Jorasch, James A.; and Sparico, Thomas M., to Walker Digital, LLC. Electronic gaming device offering a game of knowledge for enhanced payouts. 6,331,144, Cl. 463-20.000.

Walker, Jay S.; Tedesco, Daniel E.; and Jorasch, James A., to priceline.com Incorporated. Method and system for utilizing a psychographic questionnaire in a buyer-driven commerce system. 6,332,129, Cl. 705-26.000.

Walker, Michael A.; and Robinson, Karl M., to Micron Technology, Inc. Method and apparatus for supporting a polishing pad during chemical-mechanical planarization of microelectronic substrates. 6,331,139, Cl. 451-490.000.

Walker, Russell Earl. Ultimate nut driver. 6,330,844, Cl. 81-439.000.

Walker, William D.; and Korn, Peter A., to Sun Microsystems, Inc. System and method for automatically instantiating classes in a virtual machine. 6,332,218, Cl. 717-11.000.

Wall, Michael T: *See*—
Kouwenberg, Tineke C; Kouwenberg, Robert J; Petersen, Soren; Wall, Michael T; Morgan, David L; and Loughnane, Cathal, 6,330,808, Cl. 62-372.000.

Wallace, Deborah; and Parker, Matilda Y. Shower cap with elastic strap suspension device. 6,330,721, Cl. 2-174.000.

Wallace, Johnny M.; and Hawk, Richard, to Solid As A Look RV Stabilizer System, Inc. Stabilizer system for trailers. 6,331,016, Cl. 280-763.100.

Waller, Carol: *See*—
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Walley, Kenneth S.: *See*—
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Walmsley, Simon Robert: *See*—
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Walsh, Mike: *See*—
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Walsh, Patrick John: *See*—
Li, Qi; Podtburg, Eric R.; Walsh, Patrick John; Carter, William L.; Riley, Gilbert N., Jr.; Rupich, Martin W.; Thompson, Elliott; and Otto, Alexander, 6,331,675, Cl. 174-125.100.

Walsh, Timothy A.: *See*—
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Walter, Erik: *See*—
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Walters, David A.: *See*—
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Walters, Stephen Arthur; and Finch, John, to Continu-Forms Holdings PLC. Paper forms/documents. 6,331,017, Cl. 283-62.000.

Waltman, John M. Reversible clamping member for a rotisserie. 6,330,854, Cl. 99-427.000.

Walz, David A.: *See*—
MacDonald, Douglas B.; King, Jonathan J.; Sanders, Steven E.; Rheault, Alan E.; Dykstra, James R.; Waalkes, Michael L.; Walz, David A.; Williams, Patricia A.; Gravel, Donald P.; and Chang, Joseph, 6,330,773, Cl. 52-239.000.

Wan, Ming: *See*—
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Wancewicz, Edward: *See*—
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Wang, Bingji: *See*—
Dong, Junxing; Tang, Zhongming; Mi, Zhibao; and Wang, Bingji, 6,331,565, Cl. 514-532.000.

Wang, Chen-Shan. Combination pen and tool arrangement. 6,331,087, Cl. 401-195.000.

Wang, Da-Yung. Process for depositing diamond-like carbon films by cathodic arc evaporation. 6,331,332, Cl. 427-576.000.

Wang, Huifang: *See*—
Ortega, Kerry A.; Lewis, James R.; Vanbuskirk, Ronald E.; Wang, Huifang; and Maes, Stephane H., 6,332,122, Cl. 704-270.000.

Wang, James; and Hrubec, Thomas J., to Grant Industries, Inc. Grafted rubber-like silicone gel with enhanced oil compatibility and its synthetic process. 6,331,604, Cl. 528-29.000.

Wang, Janet S. Y.; Derhacobian, Narbeh; and Sunkavalli, Ravi S., to Advanced Micro Devices, Inc. Positive gate erasure for non-volatile memory cells. 6,331,952, Cl. 365-185.290.

Wang, Janet S. Y.; Derhacobian, Narbeh; and Sobek, Daniel, to Advanced Micro Devices. Intelligent ramped gate and ramped drain erasure for non-volatile memory cells. 6,331,953, Cl. 365-185.290.

Wang, Jin-Der: *See*—
Lin, Jenn-Shing; Rogoszewicz, Richard; and Wang, Jin-Der, 6,331,996, Cl. 375-130.000.

Wang, John J.; Li, Jiang; and Wu, Yider, to Advanced Micro Devices, Inc. Determination of misalignment for floating gates near a gate stack bending point in array of flash memory cells. 6,331,954, Cl. 365-185.290.

Wang, Lixiao; Tran, The Thomas Trinh; DiCaprio, Fernando; and Williams, Brett A., to SciMed Life Systems, Inc. End sleeve coating for stent delivery. 6,331,186, Cl. 623-1.110.

Wang, Mei-Cheng, to Chuan Sheng Corporation, Inc.; and Teng, Shu-Chen. Heat sink with flanged portions and spaced apart metal radiating fins. 6,330,906, Cl. 165-80.300.

Wang, Ping T.: *See*—
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Wang, Run: *See*—
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Wang, Tak Kui; Barth, Phillip W.; and Goedert, Michel G., to Agilent Technologies, Inc. Reduction of blistering and delamination of high-temperature devices with metal film. 6,331,678, Cl. 174-253.000.

Wang, Xianglong: *See*—
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Wang, Xing Long: *See*—
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Wang, Yu-Chang John: *See*—
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Wang, Yun Yu: *See*—
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Wang, Zhijiang; and Pan, Junhua. Reflective optical systems for EUV lithography. 6,331,710, Cl. 250-492.200.

Wanner, Christopher J., to United States of America, Army. Mine stripper. 6,330,920, Cl. 171-19.000.

Warmus, James L.; Dreyer, Mark G.; and Shively, J. Thomas, to R. R. Donnelley & Sons. Imposition process and apparatus for variable imaging system. 6,332,149, Cl. 707-517.000.

Warner-Lambert Company: *See*—
Domagala, John Michael; Ellsworth, Edmund Lee; Huang, Liren; Renau, Thomas Eric; Singh, Rajeshwar; and Stier, Michael Andrew, 6,331,538, Cl. 514-224.500.

Warren, Patrick Vernon: *See*—
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Warren, Richard Lloyd: *See*—
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Warren, Robert L., to Solana Technology Development Corporation. Broadcast speech recognition system for keyword monitoring. 6,332,120, Cl. 704-235.000.

Washburn, Theodore: *See*—
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Wasley, Jan W. F.: *See*—
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Watanabe, Hiroshi; Ohya, Masakiyo; and Shibata, Masato, to Fujikiko Kabushiki Kaisha. Steel for gear drive plate gear and method for producing the drive plate gear. 6,330,836, Cl. 74-434.000.

Watanabe, Ryozo: *See*—
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Watanabe, Yoshihiro, to Fujitsu Limited. Connection control system and method in a switch. 6,331,982, Cl. 370-399.000.

Watanabe, Yoshinobu: *See*—
Katayama, Ichiro; Watanabe, Yoshinobu; Nakajima, Yuichi; and Shinbo, Yoshiharu, 6,331,133, Cl. 451-9.000.

Waterman, James W.: *See*—
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Waters, James W.: *See*—
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Waters, Michelle; and Plinke, Marc, to Gore Enterprise Holdings, Inc. Chemically active filter material. 6,331,351, Cl. 428-317.700.

Watson, Donald W., to What's Next Manufacturing, Inc. Yo-yo having improved tether tension control and adjustable mechanism. 6,331,132, Cl. 446-250.000.

Watson, Timothy David George; and Marsh, Katrina Anne, to Mars UK Limited. Edible composition containing zinc and linoleic acid. 6,331,567, Cl. 514-560.000.

Wax, Mark R.: *See*—
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Allen, John Timothy; and Box, Steven Anthony, 6,330,911, Cl. 166-77.510.
Webasto Vehicle Systems International GmbH: *See*—
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Webster, Matt: *See*—
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WebTV Networks, Inc.: *See*—
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Weckesser, David Scott: *See*—
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Weeks, Daniel L.; and Dagle, John, to University of Iowa Research Foundation. Positively charged oligonucleotides as regulators of gene expression. 6,331,617, Cl. 536-24.500.
Wehner, Volkmar; Stilz, Hans Ulrich; Schmidt, Wolfgang; and Seiffge, Dirk, to Aventis Pharma Deutschland GmbH. Substituted imidazolidine derivatives, their preparation, their use and pharmaceutical preparations including them. 6,331,552, Cl. 514-341.000.
Weichert, Andreas; Albus, Udo; and Jansen, Hans-Willi, to Aventis Pharma Deutschland GmbH. Use of 2-amino-3,4-dihydroquinazolines for the production of a medicament for the treatment or prophylaxis of illnesses caused by ischemic conditions. 6,331,546, Cl. 514-260.000.
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Weihl, William E.: *See*—
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Weinreich, Steve. Mechanism for constant balance with method for manufacture of variable pitch screw. 6,330,903, Cl. 160-295.000.
Weinshank, Richard L.: *See*—
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Weisman, S. Miller, II: *See*—
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Weissman, Eric M.; Spillman, William B., Jr.; and Dickens, Elmer D., Jr., to PMD Holdings Corporation. Remotely interrogated implant device with sensor for detecting accretion of biological matter. 6,330,885, Cl. 128-899.000.
Weitzman, Gregg H. Liquid sampling tool. 6,330,834, Cl. 73-863.710.
Welfonder, Konrad, to Hunter Douglas Industries BV. Holder for a depending architectural covering. 6,330,900, Cl. 160-178.10V.
Weller, Dieter Klaus: *See*—
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Werner, William E.: *See*—
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Weyburne, David W.; and Ahern, Brian S., to United States of America, Air Force. VD process and apparatus for producing stand-alone thin films. 6,331,260, Cl. 216-72.000.
Weyerhaeuser Company: *See*—
Sealey, James E., II; Persinger, W. Harvey, Jr.; Luo, Mengkui; Roscelli, Vincent A.; and Neogi, Amar N., 6,331,354, Cl. 428-393.000.
Whalen, Edward E. Global time calculator. 6,330,970, Cl. 235-70.00R.
What' s Next Manufacturing, Inc.: *See*—
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Wheatley, Michael T.: *See*—
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Wheelchair Carrier, Inc.: *See*—
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White, Stanley A.; Walley, Kenneth S.; Johnston, James W.; Henderson, P. Michael; Hale, Kelly H.; Andrews, Warner B., Jr.; and Siann, Jonathan I., to Conexant Systems, Inc. Method and apparatus for wireless testing of integrated circuits. 6,331,782, Cl. 324-763.000.
White, Thayer; and Nudelman, Edward, to Cell Therapeutics, Inc. Methods of separation and detection. 6,331,254, Cl. 210-658.000.
Whitney, Morgan Merritt, Jr.: *See*—
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Whitworth, Adam; and Richiuso, Dominick, to California Micro Devices Corporation. Termination circuits and methods therefor. 6,331,786, Cl. 326-30.000.
Whitworth, Adam; and Richiuso, Dominick, to California Micro Devices Corporation. Termination circuits and methods therefor. 6,331,787, Cl. 326-30.000.
Widdershoven, Franciscus P.; Annema, Anne J.; Storms, Maurits M. N.; and Pelgrom, Marcellinus J. M., to U.S. Philips Corporation. Non-volatile MOS RAM cell with capacitor-isolated nodes that are radiation accessible for rendering a non-permanent programmed information in the cell a non-volatile one. 6,331,947, Cl. 365-185.080.
Wieczorek, Joseph: *See*—
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Wiedmayer, Jason, to Ford Global Tech., Inc. Removable vehicle seat headrest storage in a trim panel socket. 6,331,027, Cl. 296-37.800.
Wielstra, Ytsen; and Winkel, Jolanda H. S., to U.S. Philips Corporation. Lacquer composition. 6,331,206, Cl. 106-287.130.
Wiggins, John: *See*—
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Wikan, Egil, to Os Husdyrmerkefabrikk A/S. Livestock tag locking system. 6,330,759, Cl. 40-301.000.
Wiklof, Christopher A.; and Ackley, H. Sprague, to Intermec IP Corporation. Error correction enhancement for code 93i and other machine-readable symbologies. 6,330,972, Cl. 235-462.250.
Wilcox, Robert L.: *See*—
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Williams, David M.: *See—*
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Williams, David R. Process and a system for distribution, recovery and handling of bulk edible oil and other fluids. 6,330,852, Cl. 99-408.000.

Williams, Henry G.: *See—*
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Willinger, Jonathan, to J.W. Pet Company. Molded plastic pet bowl. 6,330,956, Cl. 220-574.000.

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Wilson, C. Ron; Craft, David L.; Eirich, L. Dudley; Eshoo, Mark; Madduri, Krishna M.; Cornett, Cathy A.; Brenner, Alfred A.; Tang, Maria; Loper, John C.; and Gleeson, Martin. Cytochrome P450 monooxygenase and NADPH cytochrome P450 oxidoreductase genes and proteins related to the omega hydroxylase complex of *Candida tropicalis* and methods relating thereto. 6,331,420, Cl. 435-145.000.

Wilson, Johanne; Cranmer, Laura Lou; Pickard, James; and Baxter, Kevin, to Ford Global Technolobies, Inc. Fuel system vent line. 6,331,021, Cl. 285-239.000.

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Windte, Volker; and Fischer, Roland, to DaimlerChrysler AG. Sensor component. 6,331,772, Cl. 324-207.240.

Winkel, Jolanda H. S.: *See—*
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Winklhofer, Gerhard, to Joh. Winklhofer & Soehne GmbH und Co. KG. Plate chains with wear-resistant chain joints. 6,330,788, Cl. 59-4.000.

Wisconsin Alumni Research Foundation: *See—*
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Witt, David B., to Advanced Micro Devices, Inc. Cumulative lookahead to eliminate chained dependencies. 6,332,187, Cl. 712-23.000.

Witt, David B., to Advanced Micro Devices, Inc. System for canceling speculatively fetched instructions following a branch mis-prediction in a microprocessor. 6,332,191, Cl. 712-240.000.

Witt, Michael E.: *See—*
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Witters, Gilbert Filipe Maria; Van Vliet, Johannes Petrus; and Muller, Joop Henk, to Holland Industriele Diamantwerken B.V.; and Witcan N.V. Grinding machine. 6,331,138, Cl. 451-340.000.

Wittrup, K. Dane; Kranz, David M.; Kieke, Michele; and Boder, Eric T., to University of Illinois, The Board of Trustees of the. Yeast cell surface display of proteins and uses thereof. 6,331,391, Cl. 435-6.000.

Wolf, Beth Ann: *See—*
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Wolfe, Thomas D., to PerLorica, Inc. Method for monitoring advanced separation and/or ion exchange processes. 6,332,110, Cl. 702-22.000.

Wolff Walsrode AG: *See—*
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Wolgast, Ralph J. Promotional product. 6,330,760, Cl. 40-324.000.

Wolinsky, Lone; and Penner, Arvi, to Medtronic, Inc. Flexible medical stent. 6,331,189, Cl. 623-1.150.

Wong, Alexander K. C.; Teng, David H. -F.; and Tavtigian, Sean V., to Myriad Genetics, Inc. Human CDC14A gene. 6,331,614, Cl. 536-23.500.

Wong, Chun Sing, to E.I. du Pont de Nemours and Company. Non-massing toughener for polyamides. 6,331,592, Cl. 525-71.000.

Wong, Keith H.: *See—*
Bautista, Edward V., Jr.; Hamilton, Darlene G.; Lee, Weng Fook; Chen, Pau-Ling; and Wong, Keith H., 6,331,951, Cl. 365-185.220.

Wong, Vernon G.; Hu, Mae W. L.; and Berger, Donald E., Jr., to Oculex Pharmaceticals, Inc. Controlled-release biocompatible ocular drug delivery implant devices and methods. 6,331,313, Cl. 424-427.000.

Wong, Vincent W. C.; Oldfield, William W.; and Harvey, Kenneth C., to Anritsu Company. RMS power sensor with 84 dB dynamic range. 6,331,769, Cl. 324-132.000.

Wong Shing, Jane B.; Maltesh, Chidambaram; and Hurlock, John R., to Nalco Chemical Company. Method of increasing retention and drainage in papermaking using high molecular weight water-soluble anionic or monionic dispersion polymers. 6,331,229, Cl. 162-168.300.

Woo, Jeffrey M.: *See—*
Hori, Toshikazu; Paillet, Guy; and Woo, Jeffrey M., 6,332,137, Cl. 706-15.000.

Wood, Byron A., II; and Howard, William H., to Deposition Sciences, Inc. Optical interference coating capable of withstanding severe temperature environments. 6,331,914, Cl. 359-584.000.

Wood, Roy W. Sealing bearings in drill bits. 6,330,923, Cl. 175-371.000.

Wood, Timothy E., to Poly Vac, Inc. Medical instrument sterilization system. 6,331,280, Cl. 422-300.000.

Wood, William I.: *See—*
Bennett, Brian D.; Goeddel, David; Lee, James M.; Matthews, William; Tsai, Siao Ping; and Wood, William I., 6,331,302, Cl. 424-146.100.

Woods, Patrick: *See—*
Ciuca, Zazu; Woods, Patrick; Palmer, Roger; Ruggles, Brian; and Kuhar, Otto, 6,330,899, Cl. 160-170.00R.

Woods, Virgil L., Jr., to Carta Proteomics, Inc. Method for characterization of the fine structure of protein binding sites. 6,331,400, Cl. 435-7.100.

Woodward, Ernest Earl: *See—*
Harris, Jeffrey Martin; Woodward, Ernest Earl; and Borgstahl, Ronald W., 6,331,972, Cl. 370-313.000.

Work Systems Technology Pty Ltd.: *See—*
Wilkinson, Wesley, 6,331,009, Cl. 280-33.996.

Wotiz, Richard: *See—*
Sachs, James; Pomeroy, Thomas W.; Novicov, Aleksey; Conboy, Garth; Walter, Erik; Leshner, William S.; Duga, Brady; and Wotiz, Richard, 6,331,865, Cl. 345-776.000.

Woychik, Charles G.: *See—*
Milewski, Joseph M.; and Woychik, Charles G., 6,330,967, Cl. 228-180.220.

Wright, David A.; and Voytas, Daniel F., to Iowa State University Research Foundation, Inc. Plant retroelements. 6,331,662, Cl. 800-278.000.

Wright, Dexter V.; and Weinert, Robert, to United States of America, Navy. Method of shrink fitting crystalline sapphire. 6,330,741, Cl. 29-600.000.

Wright, Steven G.: *See—*
Lyons, Shawn L.; and Wright, Steven G., 6,331,317, Cl. 424-489.000.

Wu, Chengde: *See—*
Chan, Ming Fai; Wu, Chengde; Raju, Bore Gowda; Kogan, Timothy; Kois, Adam; Verner, Erik Joel; Castillo, Rosario Silvestre; Yalamoori, Venkatachalapathi; and Balaji, Vitukudi Narayanaiyengar, 6,331,637, Cl. 548-241.000.

Wu, Chi tse: *See—*
Kardokus, Janine K.; Wu, Chi tse; Parfeniuk, Christopher L.; and Buehler, Jane E., 6,331,234, Cl. 204-298.130.

Wu, Chi-Kai; and Hsu, Yi-Shou, to National Datacom Corporation. Intelligent roaming in AGV application. 6,332,077, Cl. 455-432.000.

Wu, Chi-San; Senak, Laurence; Osborne, Donna; Curry, James F.; Schriver, Charles B.; and Silverstein, Irwin B., to ISP Investments Inc. Storage stabilized oxygen degradable polymer. 6,331,333, Cl. 428-35.700.

Wu, Huoy-Jong: *See—*
Sung, Kuo-Tung; Chu, Wen-Ting; and Wu, Huoy-Jong, 6,331,721, Cl. 257-317.000.

Wu, Jerry, to Hon Hai Precision Ind. Co., Ltd. Electrical connector having a reduced longitudinal dimension. 6,331,122, Cl. 439-567.000.

Wu, Shye-Lin, to Texas Instruments - Acer Incorporated. Fipos method of forming SOI CMOS structure. 6,331,456, Cl. 438-154.000.

Wu, Xiaoqing: *See—*
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Wu, Yeong-Wei Andy: *See—*
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Wu, Yider: *See—*
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Wu, Yong-Qian: *See—*
Hamilton, Gregory S.; Norman, Mark H.; and Wu, Yong-Qian, 6,331,537, Cl. 514-215.000.

Wu, Youfeng, to Intel Corporation. Accurate invalidation profiling for cost effective data speculation. 6,332,214, Cl. 717-5.000.

Wu, Zhiqiang: *See—*
Parekh, Kunal R.; Wu, Zhiqiang; and Li, Li, 6,331,720, Cl. 257-308.000.

Wurman, Ze'ev: *See—*
Or-Bach, Zvi; Wurman, Ze'ev; Zeman, Richard; and Cooke, Laurance, 6,331,790, Cl. 326-41.000.

Wurzburger, Stephen R.; and Overton, James Michael. Sterilizing and disinfecting compound. 6,331,514, Cl. 510-254.000.

Wylie, Douglas H.; Szabo, John; and Ravindran, Saj, to Saint-Gobain Bayform America, Inc. Method of fabricating adhesively secured frame assembly. 6,331,223, Cl. 156-160.000.

Xaar Technology Limited: *See—*
Harvey, Robert A.; and Temple, Stephen, 6,331,045, Cl. 347-54.000.
Xerox Corporation: *See—*
Domoto, Gerald A., 6,332,067, Cl. 399-307.000.
Dymetman, Marc; and Copperman, Max, 6,330,976, Cl. 235-487.000.
Howard, John Leroy, 6,332,065, Cl. 399-106.000.
Knox, Keith T., 6,331,860, Cl. 345-620.000.
Loce, Robert P.; and Branciforte, Michael, 6,332,044, Cl. 382-269.000.
Moran, Thomas P.; van Melle, William J.; Kurtenbach, Gordon P.; and Chiu, Patrick, 6,332,147, Cl. 707-500.100.
Schank, Richard L.; Limburg, William W.; and Renfer, Dale S., 6,331,370, Cl. 430-58.300.
Xicor, Inc.: *See—*
Drori, Joseph; and Lin, Allan Ming-Lun, 6,331,768, Cl. 323-369.000.
Xie, Ping: *See—*
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Xu, Chongying; Baum, Thomas H.; Carl, Ralph J.; and Sturm, Edward A., to Advanced Technology Material, Inc. Method and apparatus for forming low dielectric constant polymeric films. 6,331,211, Cl. 118-719.000.
Xu, Dan-Xia: *See—*
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Yabuki, Hiroyuki: *See—*
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Yagi, Atsuo: *See—*
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Yagi, Takayuki: *See—*
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Yahav, Giora: *See—*
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Yakushiji, Toru; Mizoguchi, Tadashi; Suetsucu, Junichi; Minemoto, Hitoshi; Takemoto, Hitoshi; Shima, Kazuo; and Hagiwara, Yoshihiro, to NEC Corporation. Electrostatic inkjet head having an ink drain for draining ink from a slit. 6,331,046, Cl. 347-55.000.
Yalamoori, Venkatachalapathi: *See—*
Chan, Ming Fai; Wu, Chengde; Raju, Bore Gowda; Kogan, Timothy; Kois, Adam; Verner, Erik Joel; Castillo, Rosario Silvestre; Yalamoori, Venkatachalapathi; and Balaji, Vitukudi Narayanaiyengar, 6,331,637, Cl. 548-241.000.
Yamabana, Kiyoshi, to NEC Corporation. Chart parsing method and system for natural language sentences based on dependency grammars. 6,332,118, Cl. 704-9.000.
Yamada, Kohzaburoh: *See—*
Ezoe, Toshihide; and Yamada, Kohzaburoh, 6,331,386, Cl. 430-619.000.
Yamada, Satoru: *See—*
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Yamada, Shigeki, to Canon Kabushiki Kaisha. System for calibrating image processing characteristics of a printer. 6,331,042, Cl. 347-19.000.
Yamada, Toshishige; Takiguchi, Yoshihiro; Huang, Dehuan; and Yamamoto, Yoshihisa, to Leland Stanford Junior University, Board of Regents of the; and Research Development Corp. Atomic-level electronic network and method of fabrication. 6,331,454, Cl. 438-128.000.
Yamada, Yukimitsu; Kawahata, Ken; Hebiguchi, Hiroyuki; Fujiyoshi, Tatsumi; and Saito, Junichi, to LG Philips LCD Co., Ltd.; and Alps Electric Co., Ltd. Image expansion display and driver. 6,331,862, Cl. 345-660.000.
Yamade, Takumi; Hayashi, Hiroaki; and Sako, Teruhisa, to Rohm Co., Ltd. Thermal printhead and method of making the same. 6,331,868, Cl. 347-208.000.
Yamagata Casio Co., Ltd.: *See—*
Sato, Yoshinori; Suzuki, Katuo; Ito, Osamu; and Tokairin, Yoshiichi, 6,331,965, Cl. 368-10.000.
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Yamakage, Hisaaki: *See—*
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Yamamoto, Hajime; Tanaka, Shigeru; Shigeta, Masaaki; Mizutani, Mami; Monden, Yukitaka; and Uchino, Hiroshi, to Kabushiki Kaisha Toshiba. Series compensator. 6,331,765, Cl. 323-210.000.
Yamamoto, Hideki; and Miyawaki, Tetsuyuki, to Sony Corporation. Projection-type display device and method of adjustment thereof. 6,331,060, Cl. 353-31.000.
Yamamoto, Hitoshi: *See—*
Koga, Masaki; Suzuki, Nobutaka; Saitoh, Hitoshi; Oyamada, Kenshiro; Tokuhara, Koki; Mino, Shuji; Ishigaki, Naoyuki; and Yamamoto, Hitoshi, 6,331,214, Cl. 148-101.000.
Yamamoto, Seiichi: *See—*
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Yamamoto, Shohei: *See—*
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Yamamoto, Shu: *See—*
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Yamamoto, Yoshihisa: *See—*
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Yamamura, Toshio: *See—*
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Yamanaka, Yasushi: *See—*
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Yamashita, Dennis Shinji: *See—*
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Yamashita, Hidetoshi: *See—*
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Nishimura, Hirofumi; Kuji, Youichi; Kono, Seiko; Yamashita, Hiroyuki; and Araki, Keiji, 6,330,796, Cl. 60-286.000.
Yamashita, Kouji; Yoshida, Satohisa; Umebayashi, Makoto; Kamei, Seiji; Hotta, Hiroyuki; and Uramune, Hidekazu, to Denso Corporation; and Toyota Jidosha Kabushiki Kaisha. Vehicle air conditioner with automatical selection of foot mode and foot/defroster mode. 6,330,979, Cl. 237-12.30R.
Yamashita, Takayuki: *See—*
Hayashikawa, Hiroyuki; Eguchi, Satoshi; and Yamashita, Takayuki, 6,331,995, Cl. 372-107.000.
Yamazaki, Keiji; Seno, Yoshihiko; Kamoshida, Osamu; and Takahashi, Yasuhiro, to Showa Denko K.K. Condensing apparatus for use in a refrigeration cycle receiver-dryer used for said condensing apparatus. 6,330,810, Cl. 62-509.000.
Yamazaki, Shunpei; Ohtani, Hisashi; Miyanaga, Akiharu; and Teramoto, Satoshi, to Semiconductor Energy Laboratory., Ltd. Co. Method for manufacturing a semiconductor thin film. 6,331,457, Cl. 438-166.000.
Yamazaki, Shunpei; Teramoto, Satoshi; Koyama, Jun; and Miyanaga, Akiharu, to Semiconductor Energy Laboratory Co., Ltd. Method and manufacturing semiconductor device. 6,331,475, Cl. 438-479.000.
Yamazaki, Shunpei; Koyama, Jun; and Ohtani, Hisashi, to Semiconductor Energy Laboratory Co., Ltd. Thin film circuit with improved carrier mobility. 6,331,718, Cl. 257-64.000.
Yamazaki, Shunpei; and Teramoto, Satoshi, to Semiconductor Energy Laboratory Co., Ltd. Hybrid circuit and electronic device using same. 6,331,722, Cl. 257-347.000.
Yamazaki, Shunpei; Takemura, Yasuhiko; and Zhang, Hongyong, to Semiconductor Energy Laboratory Co., Ltd. Active matrix display device having at least two transistors having LDD region in one pixel. 6,331,723, Cl. 257-351.000.
Yan, Chun: *See—*
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Yan, Duen-Hwa: *See—*
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Yanagawa, Nobuyuki, to Ricoh Company, Ltd. Multicolor image forming method and apparatus using an intermediate transfer belt and apparatus having plural developing units for the same. 6,332,066, Cl. 399-302.000.
Yanagi, Haruyuki: *See—*
Yokoi, Katsuyuki; Nakata, Kazuhiro; Arai, Atsushi; and Yanagi, Haruyuki, 6,331,898, Cl. 358-1.900.
Yoshino, Hiroshi; Katayanagi, Jun; Yanagi, Haruyuki; Sonoda, Shinya; and Asai, Yasuyuki, 6,331,002, Cl. 271-117.000.
Yanagimachi, Ryuzo: *See—*
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Yang, Bing: *See—*
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Yang, Feng-Yi, to Taiwan Semiconductor Manufacturing Company, Ltd. Method and apparatus for calibrating a dissolved oxygen analyzer. 6,330,819, Cl. 73-1.030.
Yang, Joo-Sung: *See—*
Tompkins, Wayne; Tompkins, Mary; and Yang, Joo-Sung, 6,331,616, Cl. 536-23.720.
Yang, Tao; and Chua, Leon O., to University of California, The Regents of the. Chaotic digital code-division multiple access (CDMA) communication systems. 6,331,974, Cl. 370-342.000.
Yang, Zhiwei: *See—*
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Yanmar Diesel Engine Co., Ltd.: *See—*
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Yano, Kentaro: *See*—
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Ogushi, Tetsurou; Murakami, Masaaki; Yao, Akira; Okamoto, Takeshi; Masumoto, Hiromitsu; and Yamakage, Hisaaki, 6,330,907, Cl. 165-104.260.
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Yarnall, Stephen T.; and DiFrancesco, Mark W., to Ethicon Endo-Surgery, Inc. Guidance method for radiation detection. 6,331,703, Cl. 250-336.100.
Yaroch, Michael D.: *See*—
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Yashima, Noboru: *See*—
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Yasuda, Mitsuru: *See*—
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Ye, Yan; Ionov, Pavel; Zhao, Allen; Hsieh, Peter Chang-Lin; Ma, Diana Xiaobing; Yan, Chun; and Yuan, Jie, to Applied Materials, Inc. Method of pattern etching a low K dielectric layer. 6,331,380, Cl. 430-318.000.
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Lederman, Seth; Chess, Leonard; and Yellin, Michael J., 6,331,615, Cl. 536-23.530.
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Yerxa, Benjamin R.; Rideout, Janet L.; and Jones, Arthur C., to Inspire Pharmaceuticals, Inc. Method of promoting mucosal hydration with certain uridine, adenine and cytidine diphosphates and analogs thereof. 6,331,529, Cl. 514-47.000.
YKK Corporation: *See*—
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Yo, Yu-Shi; Fang, Tsung-Hsing; and Ou, Teh-Chuan, to Asustek Computer, Inc. Mounting fixture for CPU of a portable-type computer system. 6,330,996, Cl. 248-694.000.
Yokoi, Katsuyuki; Nakata, Kazuhiro; Arai, Atsushi; and Yanagi, Haruyuki, to Canon Kabushiki Kaisha. Encoded data printing apparatus and method for printing a code and an image on the same medium. 6,331,898, Cl. 358-1.900.
Yokota, Eiji; Hirose, Atsuo; Takagi, Kazuhiko; Kashima, Hiroyuki; and Makino, Kazumasa, to Brother Kogyo Kabushiki Kaisha. Recording medium discharging apparatus and image forming apparatus provided therewith. 6,331,003, Cl. 271-290.000.
Yokoyama, Takashi; and Baba, Masakazu, to NEC Corporation. Method of patterning a substrate with an atomic mask. 6,331,238, Cl. 205-135.000.
Yonan, Edward E.: *See*—
Ng, John S.; Wang, Ping T.; Baez, Julio A.; Liu, Chin; Anderson, Dennis K.; Lawson, Jon P.; Erb, Bernhard; Wieczorek, Joseph; Mucciariello, Gennaro; Vanzanella, Fortunato; Kunda, Sastry A.; Letendre, Leo J.; Pozzo, Mark J.; Sing, Yuen-Lung L.; and Yonan, Edward E., 6,331,622, Cl. 540-41.000.
Yoneda, Yasunobu: *See*—
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Yonekubo, Shuji; and Kosugi, Yasuhiko, to Seiko Epson Corporation. Method of driving ink jet recording head. 6,331,040, Cl. 347-15.000.
Yonezawa, Tomonori: *See*—
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Yorifuji, Akira: *See*—
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York International Corporation: *See*—
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Yoseloff, Mark L., to Shuffle Master, Inc. Video numbers game. 6,331,143, Cl. 463-18.000.
Yoshida, Ryuichi; and Okamoto, Yasuhiro, to Minolta Co., Ltd. Surface acoustic wave motor and apparatus having the same. 6,331,747, Cl. 310-313.00R.
Yoshida, Satohisa: *See*—
Yamashita, Kouji; Yoshida, Satohisa; Umebayashi, Makoto; Kamei, Seiji; Hotta, Hiroyuki; and Uramune, Hidekazu, 6,330,979, Cl. 237-12.30R.
Yoshida, Shigeo, to Sharp Kabushiki Kaisha. Feature-region extraction method and feature-region extraction circuit. 6,332,041, Cl. 382-236.000.
Yoshida, Takehiro, to Canon Kabushiki Kaisha. Data processing apparatus with communication function. 6,332,162, Cl. 709-228.000.
Yoshida, Takeo: *See*—
Azechi, Syuuichi; Taira, Yujiro; and Yoshida, Takeo, 6,331,588, Cl. 524-493.000.
Yoshihira, Aya: *See*—
Shimazu, Satoshi; Sugitani, Hiroshi; Masuda, Kazuaki; Ikeda, Masami; Ishinaga, Hiroyuki; Kashino, Toshio; Kubota, Masahiko; Yoshihira, Aya; and Kudo, Kiyomitsu, 6,331,043, Cl. 347-48.000.
Yoshikawa, Ryosuke; Jibiki, Yuichi; and Yasuda, Mitsuru, to Ricoh Company, Ltd. Dismounting method for fastening member, dismounting device for fastening member, attachment construction of fastening member and production system using the dismounting method for fastening member. 6,330,738, Cl. 29-426.400.
Yoshiki, Koichi; and Tsujii, Keiji, to Honda Giken Kogyo Kabushiki Kaisha. Control device of an internal combustion engine. 6,330,869, Cl. 123-90.150.
Yoshimura, Hisashi; and Ochi, Norihiro, to Sharp Kabushiki Kaisha. Inkjet printing apparatus. 6,331,041, Cl. 347-19.000.
Yoshino, Hiroshi; Katayanagi, Jun; Yanagi, Haruyuki; Sonoda, Shinya; and Asai, Yasuyuki, to Canon Kabushiki Kaisha. Sheet feeding apparatus. 6,331,002, Cl. 271-117.000.
Yoshio, Hiroaki: *See*—
Matsuura, Shun; Kageyu, Satoshi; Kato, Hitoshi; Asai, Kayoko; Yoshio, Hiroaki; Kato, Tsuyoshi; Hayakawa, Yoshihiro; and Maruya, Kensuke, 6,332,003, Cl. 375-240.230.
Young, C. David; Krueger, Roy W.; Becker, Michael S.; Harwell, Henry O.; and Stevens, James A., to Rockwell Collins, Inc. Unifying slot assignment protocol multiple access system. 6,331,973, Cl. 370-337.000.
Young, Jeff: *See*—
Paine, Mark A.; and Young, Jeff, 6,332,148, Cl. 707-512.000.
Young, Michael R: *See*—
Loprete, Joseph F.; Young, Michael R; Tolbert, John W, Jr.; Monk, David T; Wagner, Philip C; Hill, Joe T; Pippin, Larry; and Peters, Robert B., 6,331,925, Cl. 361-22.000.
Young, Scott: *See*—
Rubin-Wilson, Beth; Guo, Lining; Skokut, Tom; Young, Scott; Folkerts, Otto; Armstrong, Katherine; and Cowen, Neil M., 6,331,664, Cl. 800-298.000.
Younge, Robert G.: *See*—
Tierney, Michael J.; Cooper, Thomas G.; Julian, Chris A.; Blumenkranz, Stephen J.; Guthart, Gary S.; and Younge, Robert G., 6,331,181, Cl. 606-130.000.
Yu, Chih-Hsin. Rotisserie. 6,330,853, Cl. 99-421.00H.
Yu, Roy: *See*—
Kelly, Kimberley Anne; and Yu, Roy, 6,331,731, Cl. 257-704.000.
Yu, Xin Guo; and Le, Qi Cheng. Hammer mill. 6,330,982, Cl. 241-73.000.
Yuan, Jie: *See*—
Ye, Yan; Ionov, Pavel; Zhao, Allen; Hsieh, Peter Chang-Lin; Ma, Diana Xiaobing; Yan, Chun; and Yuan, Jie, 6,331,380, Cl. 430-318.000.
Yuasa, Kohji: *See*—
Ebihara, Takashi; Kikuyama, Susumu; Miyahara, Akiko; Wang, Xianglong; and Yuasa, Kohji, 6,331,367, Cl. 429-218.200.
Yudasaka, Masako; and Iijima, Sumio, to NEC Corporation. Process for producing single-wall carbon nanotubes uniform in diameter and laser ablation apparatus used therein. 6,331,690, Cl. 219-121.600.
Yun, Weiya: *See*—
Fotouhi, Nader; Gillespie, Paul; Guthrie, Robert William; Pietranico-Cole, Sherrie Lynn; and Yun, Weiya, 6,331,640, Cl. 549-72.000.
Yuri, Hidetaka: *See*—
Uchiyama, Kenichi; Kurihara, Kiyokazu; and Yuri, Hidetaka, 6,330,746, Cl. 29-872.000.
Yusa, Masami; Kato, Toshihiko; Inoue, Fumio; and Ichimura, Shigeki, to Hitachi Chemical Company, Ltd. Chip supporting substrate for semiconductor package, semiconductor device, and method for manufacturing them. 6,331,729, Cl. 257-678.000.
Yvonne, Chen: *See*—
Chen, Lee; and Yvonne, Chen, 6,331,701, Cl. 250-251.000.
Zachar, Zuzana: *See*—
Bingham, Paul M.; and Zachar, Zuzana, 6,331,559, Cl. 514-440.000.
Zaczek, Robert; Olson, Richard E.; Seiffert, Dietmar A.; and Thompson, Lorin Andrew. Use of small molecule radioligands to discover inhibitors of amyloid-beta peptide production. 6,331,408, Cl. 435-23.000.
Zagar, Thomas Walter: *See*—
Burke, Michael A.; Freyer, Paula D.; Hebbar, Mohan A.; Seth, Brij B.; Swartzbeck, Gary W.; and Zagar, Thomas Walter, 6,331,217, Cl. 148-522.000.
Zaid, Gene H.; and Wolf, Beth Ann, to Jacam Chemicals L.L.C. Compositions for dissolving metal sulfates. 6,331,513, Cl. 510-253.000.
Zakoshansky, Vladimir Mikhailovitch; and Vassilieva, Irina Ivanovna, to Illa International LLC. Method of production of product acetone of high stability to oxidation. 6,331,654, Cl. 568-411.000.
Zanetti, Claudio: *See*—
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Zanzucchi, Peter John: *See*—

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Zeman, Richard: *See*—
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Zhang, Hongyong: *See*—
Yamazaki, Shunpei; Takemura, Yasuhiko; and Zhang, Hongyong, 6,331,723, Cl. 257-351.000.

Zhang, Weigno; Kaufman, Leon; and Avram, Hector, to Toshiba America MRI, Inc. Method and apparatus for imaging instruments during interventional MRI using asymmetric spin echo sequences. 6,332,088, Cl. 600-410.000.

Zhang, Yongming: *See*—
Gupta, Deepnarayan; and Zhang, Yongming, 6,331,805, Cl. 331-107.00S.

Zhao, Allen: *See*—
Ye, Yan; Ionov, Pavel; Zhao, Allen; Hsieh, Peter Chang-Lin; Ma, Diana Xiaobing; Yan, Chun; and Yuan, Jie, 6,331,380, Cl. 430-318.000.

Zhao, Hong: *See*—
Chen, Augustin T.; Kestyn, Paul E.; and Zhao, Hong, 6,331,582, Cl. 523-400.000.

Zhao, Wei; Arnold, Steven; Noerpel, Anthony; and Roos, Dave, to Hughes Electronics Corporation. Apparatus and method for grouping carriers to minimize the occurrence of call blocking in a satellite-based communications network. 6,332,069, Cl. 455-12.100.

Zheng, Zhiliang; and Lam, Steven C., to Marvell International Ltd. Constant bandwidth, variable gain amplifier, and method. 6,331,803, Cl. 330-254.000.

Zhou, Mei Sheng: *See*—
Li, Jianxun; Zhou, Mei Sheng; Xu, Yi; and Chooi, Simon, 6,331,479, Cl. 438-618.000.

Zhou, Ru: *See*—
Dragovich, Peter S.; Prins, Thomas J.; and Zhou, Ru, 6,331,554, Cl. 514-357.000.

Zhu, Qiuming, to University of Nebraska, Board of Regents of the. Invariant, Eigenvalue based, non-degenerate data structure characterization, storage and retrieval indexing method. 6,332,037, Cl. 382-173.000.

Zhu, Tianmin; Shah, Syed M.; and Saunders, Richard W., to American Home Products Corporation. Water soluble SDZ RAD esters. 6,331,547, Cl. 514-291.000.

Zimmer, Ranier: *See*—
Luther, James P.; and Zimmer, Ranier, 6,332,052, Cl. 385-114.000.

Zoeller Company: *See*—
Zoeller, Kenneth E.; Byers, Matthew E.; West, William V.; and Fletcher, Jason, 6,331,247, Cl. 210-299.000.

Zoeller, Kenneth E.; Byers, Matthew E.; West, William V.; and Fletcher, Jason, to Zoeller Company. Septic tank filtering system. 6,331,247, Cl. 210-299.000.

Zolock, Michael J.; and Samson, Allan L., to Micro Motion, Inc. Explosion proof terminal block housing that may be opened. 6,331,674, Cl. 174-60.000.

Zuckerman, Oren: *See*—
Gever, Eval; Hermoni, Nir; Bergman, Orit; Tayar, Gil; Reshef, Eilon; Gill, Doron; Feuerstein, Addy; Caneti, Yaron; Oppenheim, Roy; Etam, Eran; Shpeizer, Zohar; Borer, Yoav; Livine, Eyal; Kikin, Ruth; Zuckerman, Oren; and Kaas, Ron, 6,331,861, Cl. 345-629.000.

Zusi, Fred C.: *See*—
Belema, Makonen; Zusi, Fred C.; and Tramposch, Kenneth M., 6,331,570, Cl. 514-563.000.

ZymoGenetics, Inc.: *See*—
Adler, David A.; and Sheppard, Paul O., 6,331,413, Cl. 435-69.100.

314613 B.C. Ltd.: *See*—
Beder, Douglas S., 6,332,097, Cl. 607-139.000.

3COM Corporation: *See*—
Beser, Nurettin B., 6,331,987, Cl. 370-486.000.
LeBlanc, Michael Robert, 6,332,142, Cl. 707-100.000.

3DV Systems Ltd.: *See*—
Manassen, Amnon; Yahav, Giora; and Iddan, Gavriel J., 6,331,911, Cl. 359-260.000.

3M Innovative Properties Company: *See*—
Cole, Brian M.; Dower, William V.; and Oxman, Joel D., 6,331,080, Cl. 385-80.000.
Crooks, Stephen L.; Lindstrom, Kyle J.; Merrill, Bryon A.; and Rice, Michael J., 6,331,539, Cl. 514-228.500.
Eisenberg, Peter M., 6,331,866, Cl. 345-784.000.
Perez, Mario A.; Damodaran, Sundaravel; and Swan, Michael D., 6,331,343, Cl. 428-141.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18th DAY OF DECEMBER, 2001

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

ADAC Laboratories: *See*—
Hug, Paul; Hines, Horace H.; and Lamp, Mark L., RE. 37,474, Cl. 250-363.080.

Aventis Pharmaceuticals, Inc.: *See*—
Strupczewski, Joseph T.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; and Bordeau, Kenneth J., RE. 37,478, Cl. 514-254.040.

Baker, Jon F. Drag conveyor system for particulate material. RE. 37,472, Cl. 198-727.000.

Bordeau, Kenneth J.: *See*—
Strupczewski, Joseph T.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; and Bordeau, Kenneth J., RE. 37,478, Cl. 514-254.040.

Challener, William A., to Imation Corp. Diffraction anomaly sensor having grating coated with protective dielectric layer. RE. 37,473, Cl. 250-225.000.

Chiang, Yulin: *See*—
Strupczewski, Joseph T.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; and Bordeau, Kenneth J., RE. 37,478, Cl. 514-254.040.

Gerber, Richard, to Intel Corporation. Alpha blending palettized image data. RE. 37,476, Cl. 345-431.000.

Glamkowski, Edward J.: *See*—
Strupczewski, Joseph T.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; and Bordeau, Kenneth J., RE. 37,478, Cl. 514-254.040.

Helsley, Grover C.: *See*—
Strupczewski, Joseph T.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; and Bordeau, Kenneth J., RE. 37,478, Cl. 514-254.040.

Hines, Horace H.: *See*—
Hug, Paul; Hines, Horace H.; and Lamp, Mark L., RE. 37,474, Cl. 250-363.080.

Hug, Paul; Hines, Horace H.; and Lamp, Mark L., to ADAC Laboratories. Adjustable dual-detector image data acquisition system. RE. 37,474, Cl. 250-363.080.

Iida. Naruaki: *See*—
Ohkura, Jun; Iida, Naruaki; Kudou, Hiroyuki; Tateyama, Masanori; and Sakamoto, Yasuhiro, RE. 37,470, Cl. 396-604.000.

Imation Corp.: *See*—
Challener, William A., RE. 37,473, Cl. 250-225.000.

Intel Corporation: *See*—
Gerber, Richard, RE. 37,476, Cl. 345-431.000.

Jagger, Theodore W., to Robert Bosch Packaging Technology, Inc. Vial filling apparatus. RE. 37,471, Cl. 53-282.000.

Kowalski, Jacek: *See*—
Tailliet, Francois; and Kowalski, Jacek, RE. 37,477, Cl. 361-111.000.

Kudou, Hiroyuki: *See*—
Ohkura, Jun; Iida, Naruaki; Kudou, Hiroyuki; Tateyama, Masanori; and Sakamoto, Yasuhiro, RE. 37,470, Cl. 396-604.000.

Kuslich, Stephen D., to Spineology, Inc. Spinal fixation device. RE. 37,479, Cl. 623-17.110.

Lamp, Mark L.: *See*—
Hug, Paul; Hines, Horace H.; and Lamp, Mark L., RE. 37,474, Cl. 250-363.080.

Matsushita Electric Industrial Co., Ltd.: *See*—
Ohara, Kazutake, RE. 37,475, Cl. 326-41.000.

Ohara, Kazutake, to Matsushita Electric Industrial Co., Ltd. Logic synthesis method and semiconductor integrated circuit. RE. 37,475, Cl. 326-41.000.

Ohkura, Jun; Iida, Naruaki; Kudou, Hiroyuki; Tateyama, Masanori; and Sakamoto, Yasuhiro, to Tokyo Electron Limited. Substrate processing apparatus and substrate processing method. RE. 37,470, Cl. 396-604.000.

Robert Bosch Packaging Technology, Inc.: *See*—
Jagger, Theodore W., RE. 37,471, Cl. 53-282.000.

Sakamoto, Yasuhiro: *See*—
Ohkura, Jun; Iida, Naruaki; Kudou, Hiroyuki; Tateyama, Masanori; and Sakamoto, Yasuhiro, RE. 37,470, Cl. 396-604.000.

SGS-Thomson Microelectronics, Inc.: *See*—
Tailliet, Francois; and Kowalski, Jacek, RE. 37,477, Cl. 361-111.000.

Spineology, Inc.: *See*—
Kuslich, Stephen D., RE. 37,479, Cl. 623-17.110.

Strupczewski, Joseph T.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; and Bordeau, Kenneth J., to Aventis Pharmaceuticals, Inc. 1-(arylthioalkyl, arylaminoalkyl, or arylmethylenealkyl)-4-(heteroaryl)piperazines and related compounds useful as antipsychotics and analgesics. RE. 37,478, Cl. 514-254.040.

Tailliet, Francois; and Kowalski, Jacek, to SGS-Thomson Microelectronics, Inc. Integrated circuit protected against electrostatic discharges, with variable protection threshold. RE. 37,477, Cl. 361-111.000.

Tateyama, Masanori: *See*—
Ohkura, Jun; Iida, Naruaki; Kudou, Hiroyuki; Tateyama, Masanori; and Sakamoto, Yasuhiro, RE. 37,470, Cl. 396-604.000.

Tokyo Electron Limited: *See*—
Ohkura, Jun; Iida, Naruaki; Kudou, Hiroyuki; Tateyama, Masanori; and Sakamoto, Yasuhiro, RE. 37,470, Cl. 396-604.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Bezdon, Ronald J.: *See*—
Russell, Randy G.; Crouse, Kent E.; Shackle, Peter W.; and Bezdon, Ronald J., B1 500,576, Cl. 315-307.000.

Crouse, Kent E.: *See*—
Russell, Randy G.; Crouse, Kent E.; Shackle, Peter W.; and Bezdon, Ronald J., B1 500,576, Cl. 315-307.000.

Energy Savings, Inc.: *See*—
Russell, Randy G.; Crouse, Kent E.; Shackle, Peter W.; and Bezdon, Ronald J., B1 500,576, Cl. 315-307.000.

Russell, Randy G.; Crouse, Kent E.; Shackle, Peter W.; and Bezdon, Ronald J., to Energy Savings, Inc. Low height ballast for fluorescent lamps. B1 500,576, Cl. 315-307.000.

Shackle, Peter W.: *See*—
Russell, Randy G.; Crouse, Kent E.; Shackle, Peter W.; and Bezdon, Ronald J., B1 500,576, Cl. 315-307.000.

LIST OF DESIGN PATENTEES

Abbott, Michael, to Abbott, Michael. Motorcycle motor clock. 452,163, Cl. D10-12.000.

Aerolatte Limited: *See*—
Lane, Gary Arron, 452,111, Cl. D7-376.000.

Akin, Connie M. Bathroom toilet paper roll and magazine holder. 452,094, Cl. D6-515.000.

Aldred, Jeff; and Hunter, Brian, to American Standard International Inc. Threaded collet assembly. 452,299, Cl. D23-259.000.

All Line Inc.: *See*—
Stekelenburg, Albert, 452,215, Cl. D13-139.400.

Allen, Linda, to Nike, Inc. Side element of a shoe upper. 452,069, Cl. D2-972.000.

Amason, Tina, to Vidpro International, Inc. StrikePal soccer ball. 452,286, Cl. D21-714.000.

American Power Conversion: *See*—
Vieno, Clint; Rao, Prasad; Manning, William R.; and Blake, Arthur J., Jr., 452,214, Cl. D13-133.000.

American Safety Razor Company: *See*—
Wonderley, Jeffrey W., 452,348, Cl. D28-48.000.

American Standard, Inc.: *See*—
Fabian, Wolfgang; Hyde, John; and Becker, Albert, 452,298, Cl. D23-241.000.

American Standard International Inc.: *See*—
Aldred, Jeff; and Hunter, Brian, 452,299, Cl. D23-259.000.
Jones, Sherry Lynn, 452,300, Cl. D23-284.000.

Amway Corporation: *See*—
Mettler, Mark F., 452,160, Cl. D9-574.000.

Ancona, Bruce E.; and Gasparino, Joseph E., to World Kitchen, Inc. Utensil handle. 452,113, Cl. D7-393.000.
Anderson, Jodie C. Pad holder for paper pad having releasable sheets. 452,277, Cl. D19-90.000.
Anderson, Scott W.: *See—*
Brandel, Robert L.; Anderson, Scott W.; and Van Dore, Jonathan P., 452,110, Cl. D7-375.000.
Andrews Company, The: *See—*
Dembicks, Tyler J., 452,077, Cl. D3-313.000.
Andrews Toolworks, Inc.: *See—*
Dembicks, Tyler J., 452,078, Cl. D3-313.000.
Aoki, Yoshihiro, to Application Art Laboratories Co., Ltd. Magnetic fastener. 452,137, Cl. D8-382.000.
Aoyama, Takeshi: *See—*
Wilson, David Edward; Kadlubowski, Bryan Michael; Leppla, Jeffrey Keith; Komada, Yoshito; Hirose, Wataru; Wakiyama, Yoshihiro; Aoyama, Takeshi; Mori, Takeshi; and Sumiyoshi, Toru, 452,142, Cl. D9-300.000.
Application Art Laboratories Co., Ltd.: *See—*
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Arena, Christopher M.: *See—*
Russell, Rachel K.; and Arena, Christopher M., 452,234, Cl. D14-247.000.
Aridgides, Steve: *See—*
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Ascom Hasler Mailing Systems, Inc.: *See—*
Weirsman, William A.; and Crowe, Allen A., 452,266, Cl. D18-51.000.
Assa AB: *See—*
Rubensson, Björn, 452,133, Cl. D8-343.000.
Atkin, Edward; and Williams, Roger Leonard, to Cannon Rubber Limited. Diaphragm for infant feeding bottle. 452,326, Cl. D24-197.000.
Avon Inflatables Limited: *See—*
Harding, Richard John Arthur, 452,136, Cl. D8-356.000.
Badillo, Connie M. Combined soap holder and scrub pouf for bathing children. 452,349, Cl. D28-63.000.
Baechler, Mary M., to Racing Strollers, Inc. Baby stroller frame. 452,195, Cl. D12-129.000.
Bagby, Robert D.: *See—*
Kim, Hyunkyu; Bagby, Robert D.; and Robbins, Richard J., 452,292, Cl. D22-140.000.
Bait Rigs Tackle Company: *See—*
Puccio, Joseph A., 452,291, Cl. D22-126.000.
Bang & Olufsen A/S: *See—*
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Barret, Thierry: *See—*
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Beaumont, Gary Robert: *See—*
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Becker, Albert: *See—*
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Becker Flugfunkwerk GmbH: *See—*
Becker, Roland, 452,225, Cl. D14-155.000.
Becker, Roland, to Becker Flugfunkwerk GmbH. Radio remote control unit. 452,225, Cl. D14-155.000.
Beckman, Robert C.: *See—*
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Becton, Dickinson and Company: *See—*
Crawford, Jamieson William Maclean; and Livanos, Stefanie, 452,312, Cl. D24-112.000.
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Belser, Deborah A.; Piña, Rosa A; and Neitzel, Donald C., Jr., to Clorox Company, The. Bottle. 452,159, Cl. D9-542.000.
Benson, Kenneth R., to Libbey Glass Inc. Platter. 452,118, Cl. D7-586.000.
Bernhardt, L.L.C.: *See—*
O'Hare, Timothy Michael; and Stanton, Shawn Christopher, 452,084, Cl. D6-379.000.
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Bernoni, Claudio, to O.Z. America, Inc. Front face of a wheel. 452,210, Cl. D12-209.000.
Better Life Inc.: *See—*
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Beveridge, Keith A.: *See—*
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BHS International, Inc.: *See—*
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Bison Designs, L.L.C.: *See—*
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Black & Decker Inc.: *See—*
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Blom, Stephan; Brouwer, Markus F.; and Boes, Erwin P., to Manco, Inc. Pen roller for highlighting, or for applying correction fluid or adhesive material. 452,273, Cl. D19-46.000.
Blomquist, Peter J.; and Strand, Todd P., to Kiltie Corporation. Modular retaining wall block. 452,332, Cl. D25-113.000.
Bodin, Helena: *See—*
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Bodino, Giampiero, to Gucci Timepieces SA. Wristwatch. 452,171, Cl. D10-32.000.
Bodnar, Eric O.: *See—*
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Bohlman, Edward William. Tripod hunting stand. 452,331, Cl. D25-62.000.
Bonnamour, Juliette, to Kabushiki Kaisha Pilot. Fountain pen. 452,272, Cl. D19-43.000.
Booz, Steven Craig: *See—*
Gilbert, Thomas Charles; Bosler, Kenneth David; and Booz, Steven Craig, 452,334, Cl. D25-143.000.
Bosler, Kenneth David: *See—*
Gilbert, Thomas Charles; Bosler, Kenneth David; and Booz, Steven Craig, 452,334, Cl. D25-143.000.
Boyd, Edward: *See—*
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BP p.l.c.: *See—*
O'Brien, Michael J., 452,328, Cl. D25-56.000.
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Phelps, Stephen L.; Clement, John A.; Nevins, David A.; Rowley, D. Scott; Brackney, Victoria L.; Torkington, Gary E.; and Pasternak, Gary S., 452,095, Cl. D6-522.000.
Phelps, Stephen L.; Clement, John A.; Nevins, David A.; Rowley, D. Scott; Brackney, Victoria L.; Torkington, Gary E.; and Pasternak, Gary S., 452,096, Cl. D6-522.000.
Bradley, Paul: *See—*
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Brangle, Patrick J.; and Polizzi, Michael C. Football cooler. 452,120, Cl. D7-606.000.
Bridgestone Corporation: *See—*
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Sato, Tetsunori, to Casio Keisanki Kabushiki Kaisha. Clock. 452,166, Cl. D10-15.000.
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Savoie, Armand J., to MacNeill Engineering Company, Inc. Removable tread device for footwear. 452,063, Cl. D2-962.000.
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98 6,331,237
135 6,331,238
167 6,331,239
254 6,331,240
283 6,331,241
724 6,331,242
727 6,331,243
777.5 6,331,244

CLASS 206

0.84 6,330,942
232 6,330,943
315.3 6,330,944
470 6,330,945

CLASS 208

39 6,331,245

CLASS 209

219 6,330,946

CLASS 210

136 6,331,246
299 6,331,247
321.8 6,331,248
506 6,330,947
610 6,331,249
635 6,331,250
636 6,331,251
646 6,331,252
652 6,331,253
658 6,331,254
670 6,331,255
712 6,331,256

CLASS 211

70.6 6,330,948
85.7 6,330,949
6,330,950

CLASS 212

270 6,330,951

CLASS 213

62 R 6,330,952
6,330,953

CLASS 216

13 6,331,257
27 6,331,258
6,331,259
72 6,331,260

CLASS 218

140 6,331,687

CLASS 219

73.21 6,331,688
121.59 6,331,689
121.6 6,331,690
121.68 6,331,691
121.73 6,331,692
121.84 6,331,693
137 PS 6,331,694
212 6,331,695
386 6,331,696
390 6,331,697
535 6,331,698
715 6,331,699

CLASS 220

269 6,330,954
507 6,330,955
574 6,330,956

CLASS 221

3 6,330,957
75 6,330,958

CLASS 222

153.1 6,330,959
205 6,330,960

CLASS 224

222 6,330,961
246 6,330,962

CLASS 227

152 6,330,963
176.1 6,330,964
6,330,965

CLASS 228

8 6,330,966
180.22 6,330,967

CLASS 229

122.24 6,330,968

CLASS 235

64.7 6,330,969
70 R 6,330,970
383 6,330,971
462.25 6,330,972
462.45 6,330,973
472.01 6,330,974
6,330,975
487 6,330,976
6,330,977
492 6,330,978

CLASS 237

12.3 R 6,330,979
69 6,330,980

CLASS 239

533.12 6,330,981

CLASS 241

73 6,330,982

CLASS 242

332.4 6,330,983
536 6,330,984

CLASS 244

54 6,330,985
134 E 6,330,986
158 R 6,330,987
164 6,330,988

CLASS 248

74.1 6,330,989
99 6,330,990
200 6,330,991
230.8 6,330,992
371 6,330,993
429 6,330,994
554 6,330,995
694 6,330,996

CLASS 250

208.1 6,331,700
225 RE. 37,473
251 6,331,701
281 6,331,702
336.1 6,331,703
339.11 6,331,704
363.08 RE. 37,474
370.01 6,331,705
385.1 6,331,706
387 6,331,707
483.1 6,331,708

491.1 6,331,709
492.2 6,331,710
6,331,711
492.21 6,331,712
497.1 6,331,713
559.29 6,331,714
559.4 6,331,715

CLASS 252

184 6,331,261
502 6,331,262

CLASS 254

94 6,330,997

CLASS 256

19 6,330,998

CLASS 257

14 6,331,716
51 6,331,717
64 6,331,718
207 6,331,719
308 6,331,720
317 6,331,721
347 6,331,722
351 6,331,723
365 6,331,724
368 6,331,725
541 6,331,726
587 6,331,727
676 6,331,728
678 6,331,729
688 6,331,730
704 6,331,731
752 6,331,732
758 6,331,733
775 6,331,734
777 6,331,735
778 6,331,736
787 6,331,737
6,331,738
789 6,331,739

CLASS 264

40.5 6,331,263
172.17 6,331,264
289.3 6,331,265
313 6,331,266
401 6,331,267
518 6,331,268

CLASS 266

207 6,331,269

CLASS 270

58.18 6,330,999

CLASS 271

3.01 6,331,000
9.01 6,331,001
117 6,331,002
290 6,331,003
301 6,331,004

CLASS 273

244 6,331,005

CLASS 277

355 6,331,006

CLASS 280

11.3 6,331,007
22 6,331,008
33.996 6,331,009
124.112 6,331,010
152.1 6,331,011
293 6,331,012
647 6,331,013
730.1 6,331,014
743.1 6,331,015
763.1 6,331,016

CLASS 283

62 6,331,017
81 6,331,018

CLASS 285

49 6,331,019
179 6,331,020
239 6,331,021

CLASS 290

1 A 6,331,740

CLASS 292

307 R 6,331,022

CLASS 294

1.1 6,331,023
74 6,331,024
110.1 6,331,025

CLASS 296

37.7 6,331,026
37.8 6,331,027
100 6,331,028
122 6,331,029
146.9 6,331,030
211 6,331,031

CLASS 297

130 6,331,032
325 6,331,033
362.11 6,331,034

CLASS 299

106 6,331,035

CLASS 301

111 6,331,036

CLASS 310

49 R 6,331,741
68 C 6,331,742
103 6,331,743
171 6,331,744
214 6,331,745
263 6,331,746
313 R 6,331,747
318 6,331,748

CLASS 313

2.1 6,331,749
113 6,331,750
402 6,331,751
441 6,331,752
542 6,331,753

CLASS 315

111.51 6,331,754
225 6,331,755
307 B1 500,576
316 6,331,756

CLASS 318

254 6,331,757
560 6,331,758
661 6,331,759
767 6,331,760

CLASS 320

132 6,331,761
134 6,331,762
136 6,331,763
6,331,764

CLASS 323

210 6,331,765
268 6,331,766
282 6,331,767
369 6,331,768

CLASS 324

132 6,331,769
158.1 6,331,770
174 6,331,771
207.24 6,331,772
252 6,331,773
300 6,331,774
303 6,331,775
309 6,331,776
312 6,331,777
557 6,331,778
619 6,331,779
684 6,331,780
754 6,331,781
763 6,331,782
765 6,331,783

CLASS 326

8 6,331,784
30 6,331,785
6,331,786
6,331,787
39 6,331,788
6,331,789
41 RE. 37,475
6,331,790
98 6,331,791

CLASS 327

48 6,331,792
51 6,331,793
112 6,331,794
156 6,331,795
208 6,331,796
333 6,331,797
470 6,331,798
538 6,331,799
566 6,331,800

CLASS 330

10 6,331,801
133 6,331,802
254 6,331,803
285 6,331,804

CLASS 331

107 S 6,331,805

CLASS 333

33 6,331,806
128 6,331,807
134 6,331,808
135 6,331,809

CLASS 335

288 6,331,810

CLASS 338

308 6,331,811

CLASS 340

5.2 6,331,812
310.01 6,331,813
6,331,814
310.05 6,331,815
540 6,331,816
573.1 6,331,817
6,331,818
604 6,331,819
606 6,331,820
635 6,331,821
825.07 6,331,822
870.16 6,331,823
929 6,331,824
988 6,331,825

CLASS 341

59 6,331,826
65 6,331,827
83 6,331,828
94 6,331,829
121 6,331,830
131 6,331,831
139 6,331,832
143 6,331,833
155 6,331,834

CLASS 342

357.06 6,331,835
357.12 6,331,836
378 6,331,837

CLASS 343

715 6,331,838
840 6,331,839

CLASS 345

1.1 6,331,840
8 6,331,841
60 6,331,842
63 6,331,843
87 6,331,844
88 6,331,845
96 6,331,846
100 6,331,847
156 6,331,848
161 6,331,849
168 6,331,850
419 6,331,851
6,331,852
427 6,331,853
431 RE. 37,476
473 6,331,854
502 6,331,855
503 6,331,856
522 6,331,857
582 6,331,858
619 6,331,859
620 6,331,860
629 6,331,861
660 6,331,862
684 6,331,863
763 6,331,864
776 6,331,865
784 6,331,866
864 6,331,867

CLASS 346

141 6,331,037

CLASS 347

9 6,331,038
11 6,331,039
15 6,331,040
19 6,331,041
6,331,042
48 6,331,043
50 6,331,044
54 6,331,045
55 6,331,046
6,331,047
57 6,331,048
64 6,331,049
65 6,331,050
6,331,051
68 6,331,052
85 6,331,053
87 6,331,054
92 6,331,055
102 6,331,056
208 6,331,868

CLASS 348

36 6,331,869
144 6,331,870
159 6,331,871
207 6,331,872
314 6,331,873
452 6,331,874
497 6,331,875
725 6,331,876
731 6,331,877

CLASS 349

5 6,331,878
9 6,331,879
43 6,331,880
86 6,331,881
122 6,331,882
152 6,331,883
156 6,331,884

CLASS 351

47 6,331,057
159 6,331,058
221 6,331,059

CLASS 353

31 6,331,060

CLASS 355

53 6,331,885
75 6,331,886

CLASS 356

3.03 6,331,887
237.2 6,331,888
239.1 6,331,889
369 6,331,890
401 6,331,891
451 6,331,892
601 6,331,893

CLASS 358

1.13 6,331,894
6,331,895
1.18 6,331,896
1.9 6,331,897
6,331,898
6,331,899
6,331,900
6,331,901
6,331,902
487 6,331,903

CLASS 359

32 6,331,904
110 6,331,905
119 6,331,906
127 6,331,907
188 6,331,908
199 6,331,909
246 6,331,910
260 6,331,911
484 6,331,912
497 6,331,913
584 6,331,914
599 6,331,915
630 6,331,916
687 6,331,917
698 6,331,918
857 6,331,061

CLASS 360

46 6,331,919
63 6,331,920
67 6,331,921
132 6,331,922
294.4 6,331,923
323 6,331,924

CLASS 361

22 6,331,925
56 6,331,926
111 RE. 37,477
212 6,331,927
6,331,928
303 6,331,929
306.3 6,331,930
6,331,931
321.2 6,331,932
679 6,331,933
686 6,331,934
6,331,935
6,331,936
687 6,331,937
735 6,331,938
784 6,331,939
785 6,331,940

CLASS 362

200 6,331,062
237 6,331,063
260 6,331,064
493 6,331,065
494 6,331,066
503 6,331,067
549 6,331,068

CLASS 363

37 6,331,941

CLASS 365

49 6,331,942
158 6,331,943
171 6,331,944
185.03 6,331,945
185.04 6,331,946
185.08 6,331,947
185.09 6,331,948
6,331,949
185.18 6,331,950
185.22 6,331,951
185.29 6,331,952
6,331,953
6,331,954
189.05 6,331,955
200 6,331,956
201 6,331,957
6,331,958
207 6,331,959
219 6,331,960
222 6,331,961
226 6,331,962
230.03 6,331,963

CLASS 366

89 6,331,069
197 6,331,070
325.92 6,331,071
338 6,331,072
341 6,331,073

CLASS 367

128 6,331,964

CLASS 368

10 6,331,965

CLASS 369

13 6,331,966
47.03 6,331,967
47.14 6,331,968
275.3 6,331,969

CLASS 370

230 6,331,970
311 6,331,971
313 6,331,972
337 6,331,973
342 6,331,974
6,331,975
350 6,331,976
360 6,331,977
392 6,331,978
6,331,979
395 6,331,980
395.1 6,331,981
399 6,331,982
400 6,331,983
401 6,331,984
403 6,331,985
468 6,331,986
486 6,331,987
510 6,331,988
535 6,331,989

CLASS 372

8 6,331,990
33 6,331,991
50 6,331,992
55 6,331,993
82 6,331,994
107 6,331,995

CLASS 374

10 6,331,074
44 6,331,075
102 6,331,076

CLASS 375

130 6,331,996
6,331,997
143 6,331,998
226 6,331,999
232 6,332,000
240 6,332,001
240.17 6,332,002
240.23 6,332,003
257 6,332,004
259 6,332,005
262 6,332,006
344 6,332,007
356 6,332,008
358 6,332,009
368 6,332,010

CLASS 376

249 6,332,011
442 6,332,012

CLASS 378

15 6,332,013
95 6,332,014
98.11 6,332,015
98.2 6,332,016
119 6,332,017

CLASS 379

68 6,332,018
88.23 6,332,019
93.25 6,332,020
142.01 6,332,021
220.01 6,332,022
242 6,332,023
433.06 6,332,024

CLASS 380

281 6,332,025

CLASS 381

17 6,332,026
71.1 6,332,027
92 6,332,028
152 6,332,029

CLASS 382

100 6,332,030
6,332,031
113 6,332,032
124 6,332,033
128 6,332,034
6,332,035
162 6,332,036
173 6,332,037
190 6,332,038
195 6,332,039
197 6,332,040
236 6,332,041
239 6,332,042
240 6,332,043
269 6,332,044
272 6,332,045
289 6,332,046
298 6,332,047

CLASS 383

119 6,331,077

CLASS 384

498 6,331,078

CLASS 385

2 6,332,048
12 6,332,049
24 6,332,050
33 6,332,051
53 6,331,079
80 6,331,080
85 6,331,081
114 6,332,052
123 6,332,053
6,332,054
140 6,332,055

CLASS 386

21 6,332,056
95 6,332,057
111 6,332,058

CLASS 396

6 6,332,059
55 6,332,060
104 6,332,061
413 6,331,082
604 RE. 37,470

CLASS 399

12 6,332,062
27 6,332,063
50 6,332,064
106 6,332,065
302 6,332,066
307 6,332,067
364 6,332,068

CLASS 400

493 6,331,083

CLASS 401

68 6,331,084
128 6,331,085
129 6,331,086
195 6,331,087
282 6,331,088

CLASS 403

56 6,331,089
286 6,331,090
322.2 6,331,091
382 6,331,092

CLASS 408

1 R 6,331,093

CLASS 410

30 6,331,094

CLASS 414

222.01 6,331,095

CLASS 415

115 6,331,096

CLASS 416

96 R 6,331,097
97 R 6,331,098
142 6,331,099
238 6,331,100

CLASS 417

423.14 6,331,101

CLASS 418

55.3 6,331,102
181 6,331,103

CLASS 419

27 6,331,270
49 6,331,271

CLASS 422

28 6,331,272
68.1 6,331,273
6,331,274
6,331,275
82.09 6,331,276
100 6,331,277
102 6,331,278
186.07 6,331,279
300 6,331,280

CLASS 423

237 6,331,281
599 6,331,282
652 6,331,283

CLASS 424

1.11 6,331,284
1.69 6,331,285
1.85 6,331,286
1.89 6,331,287
9.52 6,331,289
46 6,331,290
49 6,331,291
53 6,331,292
59 6,331,293
78.03 6,331,294
78.07 6,331,295
78.08 6,331,296
84 6,331,297
85.1 6,331,298
93.21 6,331,299
93.4 6,331,300
145.1 6,331,301
146.1 6,331,302
255.1 6,331,303
269.1 6,331,304
401 6,331,305
6,331,306
6,331,307
411 6,331,308
422 6,331,309
423 6,331,310
425 6,331,311
426 6,331,312
427 6,331,313
450 6,331,314
6,331,315
482 6,331,316
489 6,331,317
490 6,331,318
551 6,331,319
725 6,331,320

CLASS 425

133.1 6,331,104
324.1 6,331,105
549 6,331,106

CLASS 426

231 6,331,321
315 6,331,322
523 6,331,323
634 6,331,324

CLASS 427

79 6,331,325
202 6,331,326
260 6,331,327
261 6,331,328
387 6,331,329
475 6,331,330
536 6,331,331
576 6,331,332

CLASS 428

35.7 6,331,333
6,331,334
40.1 6,331,335
6,331,336
61 6,331,337
64.3 6,331,338
114 6,331,339
116 6,331,340
138 6,331,341
141 6,331,342
6,331,343
6,331,344
156 6,331,345
195 6,331,346
209 6,331,347
6,331,348
220 6,331,349
221 6,331,350
317.7 6,331,351
354 6,331,352
379 6,331,353
393 6,331,354
409 6,331,355
411.1 6,331,356
446 6,331,357
447 6,331,358
476.3 6,331,359
523 6,331,360
548 6,331,361
689 6,331,362
692 6,331,363
694 T 6,331,364

CLASS 429

9 6,331,365
17 6,331,366
218.2 6,331,367

CLASS 430

5 6,331,368
22 6,331,369
58.3 6,331,370
65 6,331,371
108.8 6,331,372
110 6,331,373
211 6,331,374
270.1 6,331,375
284.1 6,331,376
313 6,331,377
314 6,331,378
6,331,379
318 6,331,380
320 6,331,381
321 6,331,382
325 6,331,383
347 6,331,384
572 6,331,385
619 6,331,386

CLASS 431

285 6,331,107
344 6,331,108
350 6,331,109
352 6,331,110

CLASS 433

29 6,331,111
102 6,331,112
215 6,331,113

CLASS 434

32 6,331,114
169 6,331,115
262 6,331,116

CLASS 435

2 6,331,387
5 6,331,388
6,331,389
6 6,331,390
6,331,391
6,331,392
6,331,393
6,331,394
6,331,395
6,331,396
6,331,397
6,331,398
6,331,399
7.1 6,331,400
6,331,401
6,331,402
6,331,403
6,331,404
7.2 6,331,405
7.21 6,331,406
7.34 6,331,407
23 6,331,408
29 6,331,409
69.1 6,331,410
6,331,411
6,331,412
6,331,413
69.4 6,331,414
69.6 6,331,415
69.7 6,331,416
91.32 6,331,417
97 6,331,418
110 6,331,419
145 6,331,420
189 6,331,421
193 6,331,422
194 6,331,423
196 6,331,424
200 6,331,425
201 6,331,426
226 6,331,427
233 6,331,428
243 6,331,429
252.3 6,331,430
261 6,331,431
264 6,331,432
325 6,331,433
458 6,331,434

CLASS 436

10 6,331,435
27 6,331,436
43 6,331,437
172 6,331,438
174 6,331,439
501 6,331,440
518 6,331,441

CLASS 438

3 6,331,442
30 6,331,443
52 6,331,444
57 6,331,445
106 6,331,446
108 6,331,447
112 6,331,448
113 6,331,449
114 6,331,450
126 6,331,451
127 6,331,452
6,331,453
128 6,331,454
138 6,331,455
154 6,331,456
166 6,331,457
197 6,331,458
243 6,331,459
6,331,460
253 6,331,461
6,331,462
257 6,331,463
6,331,464
260 6,331,465
268 6,331,466
270 6,331,467
287 6,331,468
296 6,331,469
311 6,331,470
396 6,331,471
424 6,331,472
455 6,331,473
476 6,331,474
479 6,331,475
486 6,331,476
542 6,331,477
592 6,331,478
618 6,331,479
624 6,331,480
626 6,331,481
642 6,331,482
648 6,331,483
6,331,484
653 6,331,485
682 6,331,486
692 6,331,487
698 6,331,488
745 6,331,489
754 6,331,490
762 6,331,492
765 6,331,493
770 6,331,494
774 6,331,495

CLASS 439

21 6,331,117
91 6,331,118
6,331,119
418 6,331,120
501 6,331,121
567 6,331,122
584 6,331,123
587 6,331,124
660 6,331,125
676 6,331,126

CLASS 440

88 6,331,127

CLASS 441

129 6,331,128
133 6,331,129

CLASS 446

15 6,331,130
220 6,331,131
250 6,331,132

CLASS 451

9 6,331,133
41 6,331,134
6,331,135
56 6,331,136
285 6,331,137
340 6,331,138
490 6,331,139

CLASS 453

476 6,331,140

CLASS 454

344 6,331,141

CLASS 455

12.1 6,332,069
6,332,070
82 6,332,071
277.1 6,332,072
404 6,332,073
407 6,332,074
408 6,332,075
6,332,076
432 6,332,077
434 6,332,078
446 6,332,079
450 6,332,080
461 6,332,081
6,332,082
552 6,332,083
556 6,332,084
557 6,332,085
574 6,332,086

CLASS 460

112 6,331,142

CLASS 463

18 6,331,143
20 6,331,144
22 6,331,145
32 6,331,146

CLASS 472

126 6,331,147

CLASS 473

274 6,331,148
330 6,331,149
383 6,331,150
599 6,331,151

CLASS 482

4 6,331,152
52 6,331,153

CLASS 493

424 6,331,154
459 6,331,155

CLASS 501

95.2 6,331,496
96.4 6,331,497
135 6,331,498
139 6,331,499

CLASS 502

63 6,331,500
128 6,331,501
162 6,331,502
305 6,331,503

CLASS 504

100 6,331,504
147 6,331,505
214 6,331,506
244 6,331,507

CLASS 507

90 6,331,508

CLASS 508

136 6,331,509
578 6,331,510

CLASS 510

119 6,331,511
226 6,331,512
253 6,331,513
254 6,331,514
424 6,331,515
425 6,331,516
426 6,331,517
445 6,331,518
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RE. 37,479
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DESIGN PATENTS

01 : 452,177
452,234
04 : 452,134
452,283
06 : 452,094
452,131
452,146
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452,291
56 : 452,180

PLANT PATENTS

06 : 12,281
12,287
12,289
12,290
12 : 12,291
12,282
38 : 12,283
12,294

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